POLEVAULT SWITCHERS

PVS 405D
PoleVault Digital Switcher

Extron Electronics

INTERFACING, SWITCHING AND CONTROL

Safety Instructions

Safety Instructions • English

WARNING: This symbol, ⚡, when used on the product, is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

ATTENTION: This symbol, ⚠, when used on the product, is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

For information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the Extron Safety and Regulatory Compliance Guide, part number 68-290-01, on the Extron website, **www.extron.com.**

## Instructions de sécurité • Français

AVERTISSEMENT: Ce pictogramme, ⚡, lorsqu'il est utilisé sur le produit, signale à l'utilisateur la présence à l'intérieur du boîtier du produit d'une tension électrique dangereuse susceptible de provoquer un choc électrique.

ATTENTION: Ce pictogramme, ⚠, lorsqu'il est utilisé sur le produit, signale à l'utilisateur des instructions d'utilisation ou de maintenance importantes qui se trouvent dans la documentation fournie avec le matériel.

Pour en savoir plus sur les règles de sécurité, la conformité à la réglementation, la compatibilité EMI/EMF, l'accessibilité, et autres sujets connexes, lisez les informations de sécurité et de conformité Extron, réf. 68-290-01, sur le site Extron, **www.extron.com**.

Sicherheitsanweisungen • Deutsch

WARNUNG: Dieses Symbol ⚡ auf dem Produkt soll den Benutzer darauf aufmerksam machen, dass im Inneren des Gehäuses dieses Produktes gefährliche Spannungen herrschen, die nicht isoliert sind und die einen elektrischen Schlag verursachen können.

VORSICHT: Dieses Symbol ⚠ auf dem Produkt soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Weitere Informationen über die Sicherheitsrichtlinien, Produkthandhabung, EMI/EMF-Kompatibilität, Zugänglichkeit und verwandte Themen finden Sie in den Extron-Richtlinien für Sicherheit und Handhabung (Artikelnummer 68-290-01) auf der Extron-Website, **www.extron.com**.

Instrucciones de seguridad • Español

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ATENCIÓN: Este símbolo, ⚠, cuando se utiliza en el producto, avisa al usuario de la presencia de importantes instrucciones de uso y mantenimiento recogidas en la documentación proporcionada con el equipo.

Para obtener información sobre directrices de seguridad, cumplimiento de normativas, compatibilidad electromagnética, accesibilidad y temas relacionados, consulte la Guía de cumplimiento de normativas y seguridad de Extron, referencia 68-290-01, en el sitio Web de Extron, **www.extron.com**.

Инструкция по технике безопасности • Русский

ПРЕДУПРЕЖДЕНИЕ: Данный символ, ⚡, если указан на продукте, предупреждает пользователя о наличии неизолированного опасного напряжения внутри корпуса продукта, которое может привести к поражению электрическим током.

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Для получения информации о правилах техники безопасности, соблюдении нормативных требований, электромагнитной совместимости (ЭМП/ЭДС), возможности доступа и других вопросах см. руководство по безопасности и соблюдению нормативных требований Extron на сайте Extron: **www.extron.com**, номер по каталогу - 68-290-01.

Chinese Simplified（简体中文）

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关于我们产品的安全指南、遵循的规范、EMI/EMF 的兼容性、无障碍使用的特性等相关内容，敬请访问 Extron 网站 **www.extron.com**，参见 Extron 安全规范指南，产品编号 68-290-01。

Chinese Traditional（繁體中文）

警告: ⚡若產品上使用此符號,是為了提醒使用者,產品機殼內存在著可能會導致觸電之風險的未絕緣危險電壓。

注意 ⚠ 若產品上使用此符號,是為了提醒使用者,設備隨附的用戶手冊中有重要的操作和維護（維修）說明。

有關安全性指導方針、法規遵守、EMI/EMF 相容性、存取範圍和相關主題的詳細資訊，請瀏覽 Extron 網站: **www.extron.com**，然後參閱《Extron 安全性與法規遵守手冊》，準則編號 68-290-01。

Japanese

警告: この記号 ⚡ が製品上に表示されている場合は、筐体内に絶縁されていない高電圧が流れ、感電の危険があることを示しています。

注意: この記号 ⚠ が製品上に表示されている場合は、本機の取扱説明書に 記載されている重要な操作と保守(整備)の指示についてユーザーの 注意を喚起するものです。

安全上のご注意、法規厳守、EMI/EMF適合性、その他の関連項目については、エクストロンのウェブサイト **www.extron.com** より『Extron Safety and Regulatory Compliance Guide』(P/N 68-290-01) をご覧ください。

Korean

경고: 이 기호 ⚡ 가 제품에 사용될 경우, 제품의 인클로저 내에 있는 접지되지 않은 위험한 전류로 인해 사용자가 감전될 위험이 있음을 경고합니다.

주의: 이 기호 ⚠ 가 제품에 사용될 경우, 장비와 함께 제공된 책자에 나와 있는 주요 운영 및 유지보수(정비) 지침을 경고합니다.

안전 가이드라인, 규제 준수, EMI/EMF 호환성, 접근성, 그리고 관련 항목에 대한 자세한 내용은 Extron 웹 사이트(**www.extron.com**)의 Extron 안전 및 규제 준수 안내서, 68-290-01 조항을 참조하십시오.

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. The Class A limits provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference. This interference must be corrected at the expense of the user.

> **NOTE:** This unit was tested with shielded I/O cables on the peripheral devices. Shielded cables must be used to ensure compliance with FCC emissions limits.
>
> For more information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the "**Extron Safety and Regulatory Compliance Guide**" on the Extron website.

Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

DANGER: A danger indicates a situation that **will** result in death or severe injury.

WARNING: A warning indicates a situation that has the **potential** to result in death or severe injury.

CAUTION: A caution indicates a situation that **may** result in minor injury.

ATTENTION: Attention indicates a situation that may damage or destroy the product or associated equipment.

NOTE: A note draws attention to important information.

TIP: A tip provides a suggestion to make working with the application easier.

Software Commands

Commands are written in the fonts shown here:

```
^AR Merge Scene,,Op1 scene 1,1 ^B 51 ^W^C
[Ø1] R ØØØ4 ØØ3ØØ ØØ4ØØ ØØ8ØØ ØØ6ØØ [Ø2] 35 [17] [Ø3]
```

`Esc` `X1` * `X17` * `X20` * `X23` * `X21` CE ←

NOTE: For commands and examples of computer or device responses mentioned in this guide, the character "Ø" is used for the number zero and "0" is the capital letter "o."

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 2Ø8.132.18Ø.48: bytes=32 times=2ms TTL=32
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx –t
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.

Click the **OK** button.

Specifications Availability

Product specifications are available on the Extron website, **www.extron.com**.

Contents

Introduction

This manual covers the installation, operation, and configuration of the Extron PVS 405D PoleVault Switcher. Throughout the manual, this switcher is interchangeably referred to as the PVS 405D or the PoleVault switcher or just the switcher.

PVS 405D Description

The Extron PVS 405D is part of the PoleVault System and is used in conjunction with the Extron PVT series of transmitters and Extron speakers. It has four video and audio twisted pair inputs with one HDMI output, and has a built-in audio amplifier. The switcher accepts a combination of up to four HDMI digital signals and computer video signals with stereo audio.

A fifth input is a switchable analog audio only input for line-level audio such as iPods or MP3 players. The dedicated Aux mixed input on rear panel is always active, and it is independent of the switchable audio inputs (1-5).

As part of the Extron PoleVault system, the PVS 405D can be installed above a suspended ceiling in the Extron PVM 220, a plenum rated enclosure, or installed at ceiling level within the Extron PMK 560, a Pole Mount Kit. Alternatively it can be mounted in either the Extron WMK 160 or USFM 100 wall mount installed on a wall close to a projector or display device.

The PVS 405D switcher is used conjunction with the Extron digital PVT wall plates, (such as the PVT SW HDMI RGB D), and the VoiceLift microphone system. It is equipped with an integrated 50 watt rms stereo amplifier capable of driving 4 or 8 ohm speakers.

The switcher supports all standard single link HDMI 1.4 signals at resolutions up to 1920x1200 @ 60 Hz and HDTV resolutions up to 1080p @ 60 Hz, with 12-bit color. The switcher and the PVT wall plates feature EDID Minder technology, which automatically manages the EDID information between the display device and each HDMI and RGB input source.

The switcher has a DSP audio features incorporated that provides advanced control of filtering, ducking and so forth.

The PVS 405D is ENERGY STAR® qualified. The switcher is an energy efficient product that conserves energy and reduces running costs.

Inputs

The PoleVault switcher receives the video and audio signals sent from PVT Wallplates, which can be located up to 150 feet away. The signals are sent over shielded twisted pair (STP) cable.

It has a separate analog audio input that can be switched with the other four inputs. In addition, there is a dedicated port for connecting the optional VoiceLift microphone system, and another port for connecting an optional Priority Page Sensor. A third dedicated port allows the user to connect an aux audio device.

Outputs

The PVS 405D has one HDMI output, an amplified audio output, and a line out audio output for assistive listening or recording devices.

Control and Configuration

The PoleVault switcher can be controlled from either the front panel buttons, or software via the front panel USB or RS-232 control via a MediaLink controller.

The switcher has an RS-232 port which can be connected to a MediaLink Controller for remote control of the switcher and display. In addition an IR pass-through port is available for routing IR transport control signals from a controller to the source device.

In addition, the PVS 405D can be configured and controlled using the Extron Simple Instruction Set (SIS) of commands or through the Extron Product Configuration Software (PCS) program connected via the front panel USB port. This mini Type-B female USB connector located on the front panel can also be used for configuring the switcher settings and flash upgrading the firmware.

Three 10/100 Base-T network switch ports are also provided allowing network connectivity for multiple other devices, such as MLC controller, TouchLink panel and Ethernet controlled products, using a single LAN drop within the installation location.

Three front panel controls allow the user to adjust the independent input gains, the VoiceLift microphone input level, and the Page Sensor sensitivity.

Power Save

This Product is an ENERGY STAR® qualified product. It has two Power Save modes (Standard and Auto) that can be enabled or disabled by SIS commands, or through the Product Configuration Software (PCS). When either of these modes are enabled and the product is in a low power state, it can be taken out of that state by a front panel operation.

See the **Power Save Modes** section on page 11 for full details and **page 24** of the SIS Communication and Control section for SIS commands. **Page 43** of the Extron Product Configuration Software describes how to set the auto power save using PCS.

Application Diagram

Extron FF 120 Flat Field Speakers - 1 Pair

Extron SPK 18 - 35' Cable

TCP/IP Network

Extron PPS 35 Priority Page Sensor (Optional Accessory - mounted to Speaker Front Grille)

From PA System

Ethernet

To PoleVault Switcher

Ceiling Mounted Paging Speaker (rear view)

UTP Cable (CAT 5/5E/6)

Extron VLR 102 VoiceLift Receiver

Extron PCM 340 Projector Drop Ceiling Mount with Adjustable Pole

Extron PMK 560 Pole Mount Kit

Extron PVS 405D PoleVault Switcher

Extron UPB 25 Universal Projector Mounting Bracket

Extron PVT SW HDMI RGB D HDMI, RGB & Audio Input Wallplate

Laptop

Extron PVT SW HDMI D Dual HDMI & Audio Input Wallplate

Apple TV

Document Camera

Blu-ray Player

RS-232 to Switcher

RS-232 to Projector

Ethernet

Extron MLC 104 IP Plus MediaLink Controller

Extron VLM 2000H VoiceLift Microphone with Charging Station

Figure 1. **Typical PVS 405D Application**

Rear Panel Connections

This section describes which cables to connect to a PVS 405D Switcher.

Rear Panel Connectors

The illustration below shows the rear panel features of the PVS 405D.
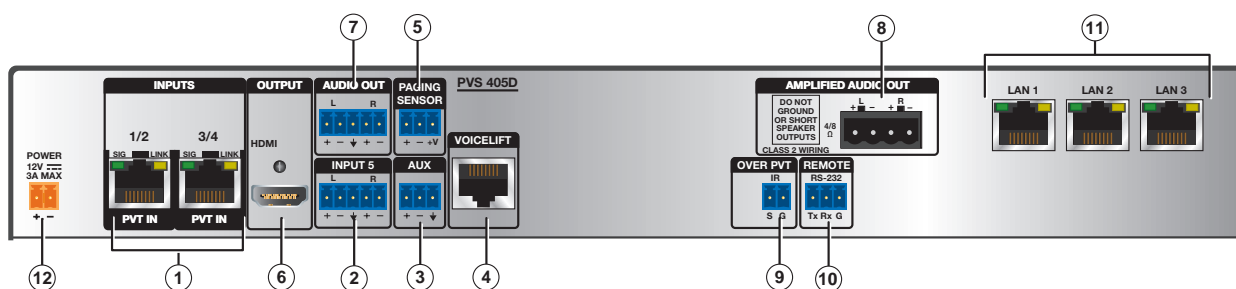
Figure 2. **PVS 405D Rear Panel Features**

Inputs

① **Inputs 1/2 and 3/4** — Connect up to two PVT SW HDMI RGB D or PVT SW HDMI D wallplates (four input sources) to these two RJ-45 female connectors using Shielded Twisted Pair (STP) cable. These four inputs can be up to four HDMI with embedded audio or two HDMI and two high resolution computer video and audio sources or any combination of both. The RGB input is digitized at the PVT input wallplate. The front panel input selection button toggles the inputs 1 through 4 as required. See "**Connector Wiring**" for wiring details.

② **Input 5** — Input 5 is a dedicated audio only input for an auxiliary, stereo, line-level analog audio signal from an output source such as iPod device or an MP3 player. Connect a cable from the source to this 5-pole captive screw connector. It can be wired as balanced or unbalanced. See "**Connector Wiring**" for wiring details.

③ **Aux audio port** — Connect an aux audio device to this 3.5mm captive screw 3-pole connector for dedicated mono audio only input.

④ **VoiceLift port** — This RJ-45 jack is dedicated for use with the optional VLR 102 VoiceLift Receiver for integration of a VoiceLift Microphone system.

> **NOTE:** To install the VoiceLift Microphone system, see the *VoiceLift Installation Guide*, supplied with the device.

⑤ **Paging Sensor port** — Connect the optional Priority Page Sensor (PPS 35) to this port, to enable program audio interruptions during paging system broadcasts.

> **NOTE:** The Extron Priority Page Sensor Kit (PPS 35, part **#70-1064-01**) is an optional accessory, purchased separately. The switcher also supports the Priority Page Sensor kit part number **70-619-01**. To install a Priority Page Sensor system, see the relevant installation guide supplied with the device.

Outputs

⑥ **HDMI video output** — Connect a suitable display device to this female HDMI digital video output connector. Use the Extron LockIt device to secure the HDMI cable at the switcher. See **"Securing the HDMI cable"** on page 7 for method of securing the cable.

⑦ **Line out audio output** — Connect an external amplifier, recording, podcasting, or assisted listening device to this 3.5 mm captive screw 5-pole connector.

⑧ **Amplified audio output** — Connect speakers to this 5 mm captive screw 4-pole connector. The amplified audio output is capable of outputting 50 watts (2 x 25 watts rms) for 4 and 8 ohm speakers. See **Connector Wiring** for wiring details.

Control Ports

⑨ **IR insert port** — For IR control for a source device, connect the IR Out port on the MLC to this 3.5 mm captive screw 2-pole connector. This routes IR transport control signals via an IR device connected to the PVT wallplate front panel.

⑩ **Remote control port** — Connect a host computer, control system, or MLC controller to this 3.5mm captive screw 3-pole connector for direct switcher control via RS-232.
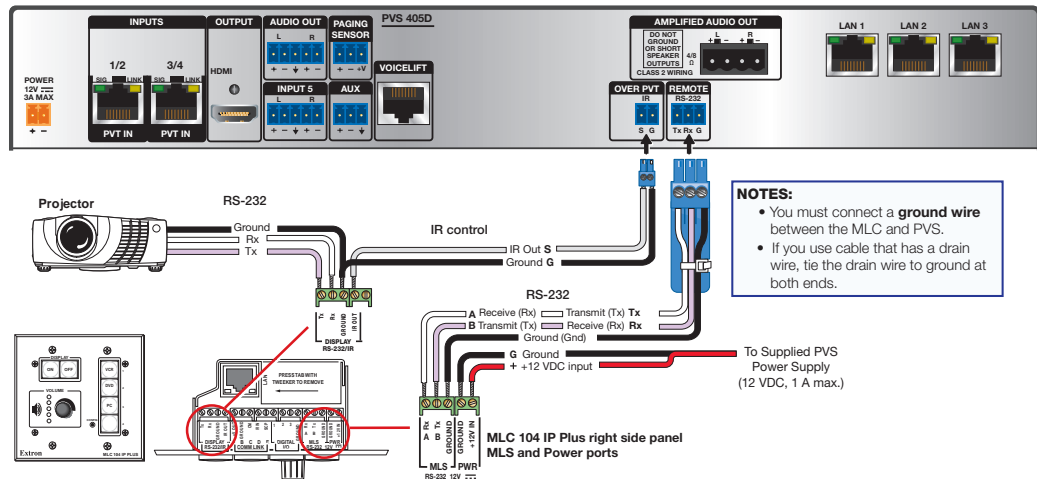
Figure 3.   MLC 104 IP Plus RS-232 and IR Connections to the PVS 405D

⑪ **LAN ports** — Connect to these three RJ-45s that act as a built-in 3-port 10/100Base-T network switch.

Power

⑫ **Power receptacle** — Connect to the supplied 12 VDC 4 A power supply to this orange female 2-pole captive screw connector. See **page 47** for the wiring diagram.

NOTES:
- Use only the supplied 12 V, 4 A power supply for this switcher.
- The PVS 405D power supply can support a typical system: for example, a PVS 405D, 2 PVT Wallplates, 2 or 4 speakers, an MLC 104 IP Plus with an IRCM DV+, and a VoiceLift Microphone system.
- If an SCP 104 is used in the system, the MLC 104 IP Plus **MUST** have its own power supply.

Labeling the AV Inputs

A sheet of corresponding labels is supplied for the installer to label the cables as an aid to easy identification of the input signal type running from the PVT Wallplates to the switcher. Once the labels are attached to the cables, the signal type transmitted on any cable can clearly be identified, enabling correct cable connection during installation.

To label the cables,

1. Peel off the label corresponding to the cable signal type (HDMI or RGB) and affix it close to one end of the cable.

NOTE: Align and press the colored section of the label to the cable first, then wrap the clear section around the cable, allowing the signal type name to be easily read.

Figure 4. **Wrap the label around the cable, colored part first.**

2. Repeat step 1 for the other end of the cable, using the same label type.

3. Using the correct label type, repeat steps 1 and 2 as necessary for all signal cables that are to be connected to the PVS 405D.

4. Connect the designated input cable to the corresponding input.
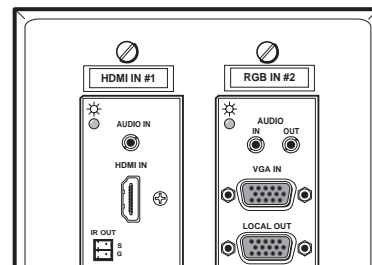
Labeling the PVT Decora face plates

To help identify the input number and type of signal that any PVT Decora wallplate sends to the PVS switcher when the wallplate is installed, a series of small labels are supplied. A label identifying the transmitted signal type should be affixed to each Decora face plate (top or bottom) where it can easily be seen after installation. This aids the user to connect a device corresponding to the plate transmission signal type, allowing correct input switching (for example input 1, input 3 and so on) at the PVS 405D.

Final Setup

With an MLC 104 IP Plus as a standard MLC controller in the PoleVault system package, the PVS 405D switcher completed setup should look similar to the figure below.

Ensure all connections are correctly made and secure.

> **NOTE:** See the *PoleVault System Installation Guide* and *MLC 104 Plus Series Setup Guide* for full MLC installation, configuration, and operating details.
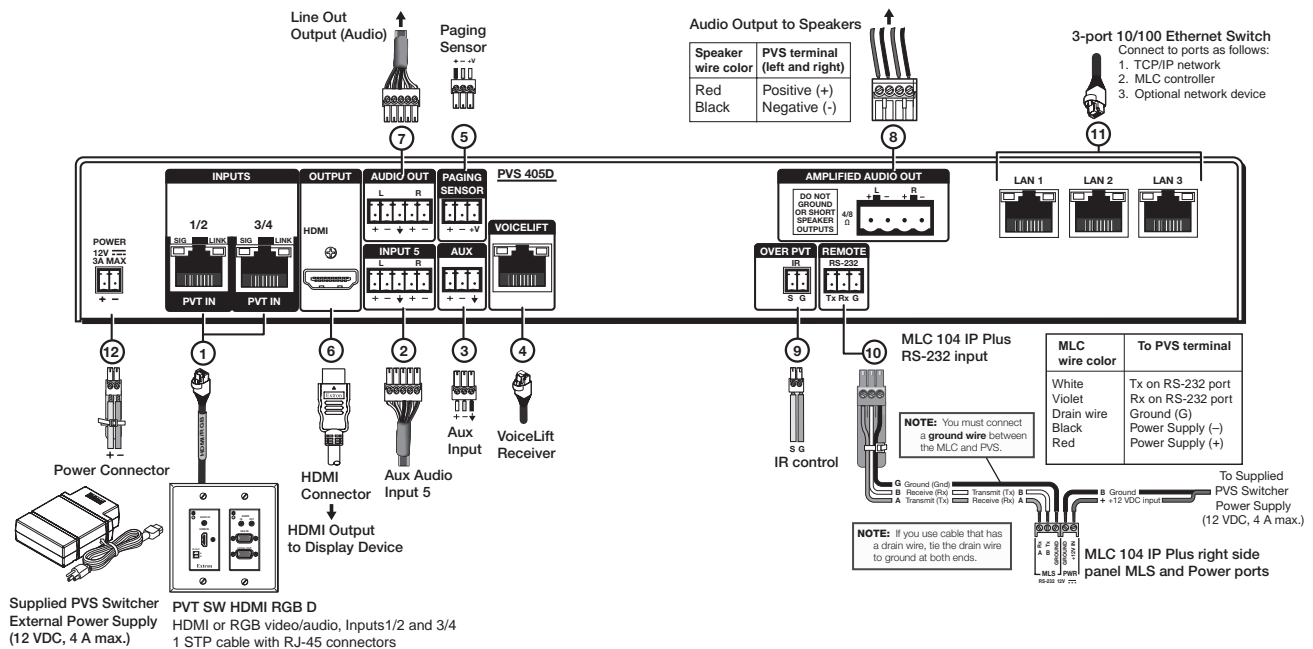
Figure 5. PVS 405D Connections

Securing the HDMI cable

The supplied Extron LockIt lacing bracket makes it possible to secure a standard HDMI cable to the PVS 405D switcher.

> **NOTE:** The tie wrap can also be tightened using pliers or similar tools.

To securely fasten an HDMI cable to the PVS 405D:

a. Plug the HDMI cable into the rear panel HDMI connector.

b. Loosen the HDMI connection mounting screw from the rear panel enough to allow the LockIt lacing bracket to be placed over it. The screw does not have to be removed.

c. Place the LockIt lacing bracket on the screw and against the HDMI cable connector.

d. Tighten the screw to secure the bracket.

e. Place the included tie wrap around the HDMI connector and the LockIt lacing bracket and tighten as shown in the images at right.
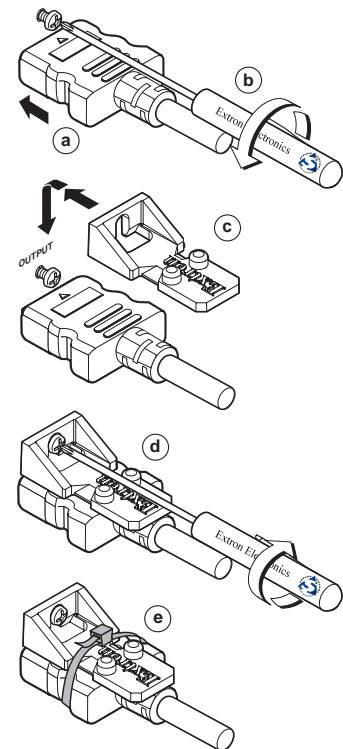
Operation

This section of the manual discusses the operation of a PVS 405D device.
Topics covered include:

- **Front Panel Overview**
- **Configuration**
- **Resetting the Switcher**
- **Front Panel Lockout (Executive Modes)**
- **Power Save Modes**
- **Setting Up and Optimizing the Audio**

Front Panel Overview
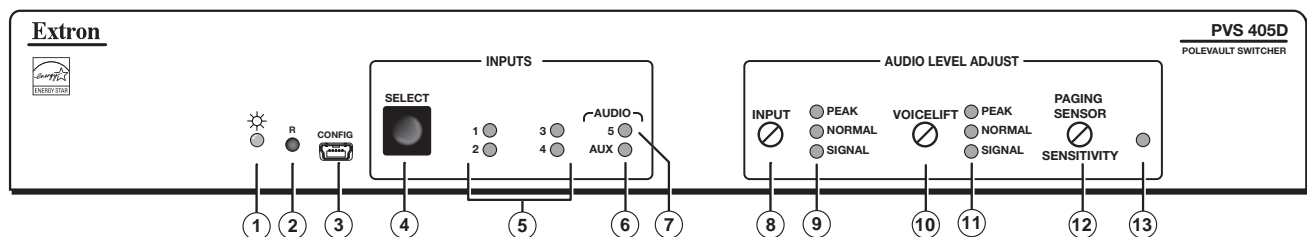
Figure 6.   PVS 405D Front Panel Features

① **Status LED** — This LED lights green when powered up, and amber when in power save mode.

② **Device Reset button** — Pressing this inset button resets the switcher to default settings. There are two reset modes. See **"Resetting the Switcher"** on page 10 for details.

③ **Front panel mini USB configuration port** — Connect a computer to this mini USB port (cable not supplied), for device configuration, control, and upgrading the firmware.

④ **Input selection button** — Pressing this toggles through and selects inputs 1-5 and the Aux input.

⑤ ⑥ ⑦ **Input selection LEDs (1-4, 5, Aux)** — The applicable input LED lights green when that input is selected and active.
Inputs 1 - 4 — Inputs 1 through 4 are HDMI with embbedded audio, or high resolution RGB signals input via the PVT wallplates. The analog RGB signal is digitized at the wallplate.
Input 5 — Input 5 is a dedicated-audio only input for an auxiliary, stereo, line-level analog audio signal from an output source such as an iPod device or an MP3 player.

> **NOTE:** Input 5 is audio only. No video signals are supported on this input.

Aux Input — This input is mono analog audio only.

⑧ **Audio input level adjustment encoder** — Use this encoder to adjust the input levels through 43 positions per rotation in 1 dB steps (-18 to +24 dB, default 0).

⑨ **Audio input level adjustment LEDs —** These three LEDs indicate the active audio level (peak, normal and signal). See **"Setting Up and Optimizing the Audio"** on page 12 for details.

⑩ **VoiceLift level adjustment encoder** — This allows the user to adjust the level of the VoiceLift (microphone) input level through 43 positions per rotation in 1 dB steps. The VoiceLift Microphone Receiver input range is from -18 dB to +24 dB, default is -3 dB.

⑪ **VoiceLift level adjustment LEDs** — These three LEDs indicate the active audio level (peak, normal and signal).

⑫ **Page Sensor Sensitivity adjustment encoder** — This allows the user to adjust the paging sensor sensitivity level for the optional PPS 35 Priority Page Sensor or PPS 25, Priority Sensor Kit.

⑬ **Page Sensor indication LED** — This LED lights yellow during Paging System broadcasts.

Front panel operation

> **NOTE:** See the "**Front Panel Overview**" on page 8 (figure 6) for the location of input buttons, adjustment encoders, LEDs, and configuration port.

- To change inputs, toggle the input button, 1 through 4 (video and audio), or 5 (line-level stereo audio only).
- To adjust audio input levels, rotate the Input adjustment encoder through 43 positions in 1 dB steps (-18 to +24 dB, default 0).
- To adjust VoiceLift microphone levels, rotate the MIC adjustment encoder through 43 positions in 1dB steps (-18 to +24 dB, default -3 dB).

> **NOTES:**
>
> - Front panel LEDs indicate input and mic levels (see image at right).
> - On initial switcher power-up the volume level is automatically adjusted to 80%
>
> PEAK — *Level set too high, lower input gain.*
> NORMAL — *Level has been properly adjusted.*
> SIGNAL — *Signal threshold; raise input gain.*
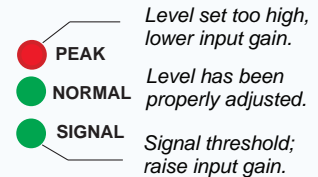
- To adjust paging sensitivity, rotate the Paging encoder clockwise to increase and counter-clockwise to decrease sensitivity.

Configuration

The PVS 405D switcher can be controlled by a MediaLink Controller (MLC) or by an RS-232 device acting through the MLC. Alternatively, the switcher can be set up and controlled via a host computer or other device (such as a control system) attached to the front panel USB connector, or to the rear panel RS-232 remote port of the switcher.

The control device (host) can use either the Extron Simple Instruction Set (SIS) commands, the Global Configurator (GC) program for Windows, or the Product Configuration Software (PCS), available at **www.extron.com**.

Firmware updates can be made via the front panel USB port via Firmware Loader or PCS.

> **NOTE:** See the **"SIS Communication and Control"** section, starting on page 16, for a full list of the relevant SIS commands..

Resetting the Switcher

The switcher can be reset to the factory defaults via the front panel, USB, or RS-232.

The reset button on the front panel is a small recessed switch that allows the user to put the switcher into two different reset modes. The PVS 405D switcher reset modes are:

- **Mode 1**: If the Reset Button is held down while the switcher is being powered up, the switcher reloads its base factory firmware instead of any newer code that was loaded after it shipped.

- **Mode 2**: If the user holds the reset button down for 10 seconds and the power LED blinks once, the switcher will reset its settings back to factory default condition (Zxxx reset). Firmware will send out unsolicited response via RS-232/USB

Executive Mode (Front Panel Security Lockout)

To prevent accidental or unauthorized changes to settings, the PVS switcher has a front panel security lockout (executive mode) that limits access to front panel controls.

When executive mode is active, all front panel functions are locked except the reset button. This mode can also be turned on or off via a Simple Instruction Set (SIS) command.

All the input LED indicators should light up for one second to indicate that executive mode has been enabled or disabled.

To turn executive mode on or off via the front panel:

1. Press and hold input selection button until all input LEDs blink (approx. 10 seconds).

2. Release the button. The LEDs extinguish except for the currently selected input. The switcher has enabled or disabled the executive mode.

Press and hold button for 10 seconds.

Aux input LEDs (including Aux) flash. The LEDs extinguish except for the currently selected input. Executive mode has been enabled or disabled.
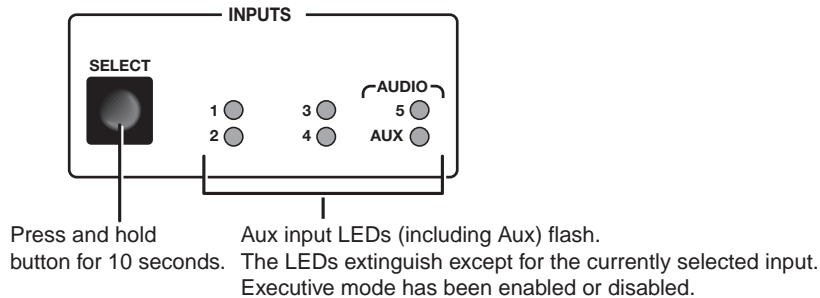
Figure 7. **Setting the executive mode via the front panel**

This mode can also be turned on or off through USB or RS-232 control.

For details on RS-232 control, see the **"SIS Communication and Control"** section on page 16.

Power Save Modes

The PVS 405D is an ENERGY STAR qualified device, and has five power modes. See table below for mode descriptions.

See the **"SIS Communication and Control"** section, page 24 for relevant commands.

Mode	Type	Activation	Device and System power	Wake-up trigger	Setup Command
0	Normal	None	Fully powered. LED is green.	N/A	Default state, SIS command reset
1	Auto Power Save	Timed after setup. If no audio signal (from switchable program inputs, Aux input, and VoiceLift input) is detected for 25 consecutive minutes, mode 2 is enabled.	Amplifier and rest of system is powered until mode 2 is entered. LED is green in mode 1.	An active audio signal detected, or when an input is switched, or if the volume is adjusted. The audio timer is reset. Can also be woken by SIS command (resets device to Mode 0).	By SIS command or Configuration Software (PCS).
2	Forced Auto Power Save	Instant	Amplifier off. Rest of system is powered. LED is amber.	If entered from mode 1, can be woken by an active audio signal, or when an input is switched, or if the volume is adjusted. Reverts to mode 1.	Either from mode 1 or set instantly by SIS command.
				If set instantly by SIS command, can only be woken by SIS command, input selection, or volume adjustment. Reverts to the previously set mode (0 or1).	
3	Forced Standby Power Save	Instant	Amplifier off. Wallplates off. Rest of system is powered. LED is amber. On PVS 405D, only USB, RS-232, network switch ports, reset, and input buttons are functional.	Pressing the front input toggle button, or switching the inputs from the attached MLC controller. Reverts to the previously set mode (0 or1). Can also be woken by SIS command.	SIS command only.
4	Forced Network Standby Power Save	Instant	Amplifier off. Wallplates off. Rest of system is powered. LED is amber. On PVS 405D, only USB, RS-232, reset, and input buttons are functional.	Pressing the front input toggle button, or switching the inputs from the attached MLC controller. Reverts to the previously set mode (0 or1). Can also be woken by SIS command.	SIS command only.

NOTE: Front USB and rear remote RS-232 ports are powered and active all the time regardless of the current power save mode.

Setting Up and Optimizing the Audio

The following steps ensure optimal sound is achieved by configuring the switcher. For each step, refer to the sections indicated for more information.

Steps for Optimizing the Audio

1. Ensure all the settings are at default. These are the settings the PVS has upon initial power up. The default settings are as shown below.

   • Volume is set at 80%.

   • Bass and treble are set at 0.

   > **NOTE:** Output volume can be adjusted via USB, RS-232, or configuration software.

2. Ensure that the PVT transmitters are connected to the PVS and that there is an audio input source present at each of the transmitters. Refer to the transmitters' user's manual for installation/connection information.

3. Ensure a set of speakers are connected to the PVS 405D.

4. Adjust the input sensitivity for one input through the front panel or by configuration software to a level just below where audio input is peaking. See the sections "Individual channel input sensitivity control" and "Front panel input sensitivity control", later in this chapter, for details. Repeat for all five inputs.

   > **NOTE:** Adjusting input sensitivity for all inputs ensures that all inputs are at the same level, and at the highest level possible before peaking occurs. Step 4 ensures that when the volume is at 100% the audio signal will not be distorted (clipped).

5. Fine tune the audio by making adjustments to the bass and treble until the desired settings are reached. See "Bass, treble" later in this chapter.

6. The aux input is selectable for configuration only. To do this press and hold the Select button for 3 seconds until the Aux LED lights. Then turn the Input encoder to the level desired. See **Front panel input sensitivity adjustment** section on page 13 for details. Aux input can be adjusted via SIS or PCS.

7. Press the Select button to exit the Aux configuration mode.

Gain Control

Individual channel input sensitivity control

Individual channel input gain control adjustments are made by rotating the adjustment encoder for the selected input button. The adjustment range is -18 dB to +24 dB, with the default set at 0 dB.

> **NOTE:** Adjusting input sensitivity for all inputs ensures that all inputs are at the same level and at the highest level possible before clipping occurs.

Front panel input sensitivity adjustment

To make sure the right input sensitivity is attained, do the following:

For the active input (with the LED lit), rotate the level adjustment encoder until the Normal LED is lit and the Peak LED only lights occasionally.

> **NOTE:** Having the audio level beyond the point at which the peak LED flashes results in a distorted output signal (clipping).
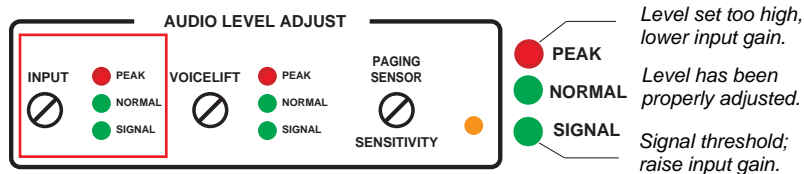
Figure 8. Front panel Input audio Min/Max LED and adjustment encoders

Individual gain adjustment can also be made by configuration software or SIS commands (see "**SIS Communication and Control**" for details on SIS commands).

Repeat the steps for the other inputs as desired.

> **NOTE:** The Peak/Normal/Signal LEDs function as the Aux Input level indicator only when the switcher is in the "AUX Adjust" mode.

Bass and treble control

For optimum audio quality, the audio input levels and the bass and treble controls must all be set up properly. Input audio levels may need to be adjusted depending on the variation of the output levels from different source devices.

> **NOTE:** By default these levels are set for the consumer product level of -10 dBV.

Bass and treble should be adjusted once the input and output levels have been adjusted. These are adjusted by configuration software or SIS commands only, with a range from -24 dB to +12 dB. By default the bass and treble have been set at 0 dB. See the **SIS Communication and Control**" section for details on SIS commands.

VoiceLift level adjustment

To adjust VoiceLift microphone levels, rotate the MIC adjustment encoder through 43 positions (in 1 dB steps) from -18 dB to +24 dB, default is -3 dB.

While speaking into the microphone, increase the gain until the Normal LED is lit and the Peak LED only lights occasionally.
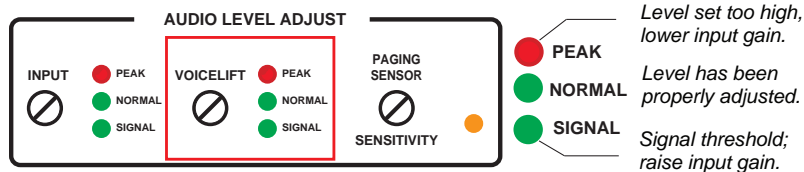
Figure 9.   Front panel VoiceLift Mic Min/Max LED and adjustment encoder

The VoiceLift Microphone Receiver input signal is not affected by the volume adjustment and tone control via SIS or an MLC controller attached to the switcher. The VoiceLift audio channel is always active, and it is independent of the selectable audio inputs (1 - 5).

The VoiceLift Receiver Microphone input audio can be heard throughout a presentation, whether or not another input is selected.

> **NOTE:** If audio output is muted via the "1Z" SIS command, all audio will not be heard.

The VoiceLift Microphone input can be muted via a separate SIS command. See the "**SIS Communication and Control**" section, for details.

Paging sensitivity adjustment

When the Priority Page Sensor, or the PPS 35 microphone interface, or the Priority Page Sensor kit is connected to the Priority sensor input on the rear panel, the HDMI output audio, amplified and line out audio outputs are muted during a system announcement. The yellow LED indicator lights up as an announcement or page is made over the facility PA system.

The Priority Page Sensor kit works with 25V/70V and 4/8 ohms paging systems. The PPS 35 works with any public address system speakers.

To adjust Paging sensitivity, rotate the Paging Sensor adjustment encoder clockwise to increase sensitivity and counter-clockwise to decrease sensitivity.
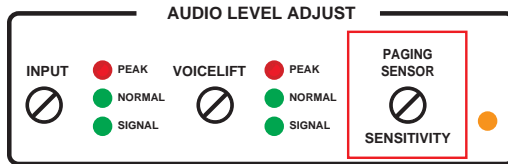
Figure 10. Front panel Paging Sensor Min/Max LED and adjustment encoder

Paging sensor delay (1-8, in 1 second steps, 0 = disabled) can be set via SIS or configuration software. The default = 3 (enabled).

> **NOTE:**   The Paging Sensor port must be enabled in order to operate fully.

The paging sensor hold time can be set via SIS or configuration software to ensure the amplified and line out audio outputs stay muted for a specific duration after an announcement or page is finished. This is to prevent the audio to be un-muted if the person pauses or stops talking while making the announcement or page.

SIS Communication and Control

The PVS 405D can be configured and controlled via a host computer or other device (such as a control system) attached to the rear panel RS-232 connector or a LAN port or the front panel USB port (recommended). Control is made using the Extron Simple Instruction Set (SIS) of commands, or the Product Configuration Software (PCS) program.

Commands can be entered using a Telnet application such as the Extron DataViewer, available at **www.extron.com**. See the *DataViewer Help* file for use.

This section describes SIS communication and control. Topics that are covered include:

- **Host to Switcher Communications**
- **Commands and Responses**

The switcher uses a protocol of 9600 baud, 1 stop bit, no parity, and no flow control and the rear panel RS-232 captive screw connector has the pin assignments as shown at right.

```
REMOTE
RS-232

Tx Rx  G
```
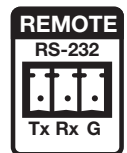
Host to Switcher Communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the PVS 405D determines that a command is valid, it executes the command and sends a response to the host device. All responses from the switcher to the host end with a carriage return and a line feed (CR/LF = ↵), indicating the end of the response character string (one or more characters).

Switcher-initiated Messages

When a local event such as a front panel selection or adjustment takes place, the PVS 405D responds by sending a message to the host. No response is required from the host. Example switcher-initiated messages are listed here.

- ↵ © Copyright 2014, Extron Electronics, PVS 405D, Vx.xx, 60-1235-01↵
- Chn ⏹x1⏹ ↵ (where ⏹x1⏹ is the input number when an input switches).

Copyright Information

↵ © Copyright 2014, Extron Electronics, PVS 405D, Vx.xx, 60-1235-01↵

The copyright message is displayed upon connecting to an PVS product via RS-232. Vx.xx is the firmware version number. The current date and time are displayed.

Error Responses

When the PVS 405D receives a valid command, it executes the command and sends a response to the host device. If the unit is unable to execute the command because the command contains invalid parameters, it returns an error response to the host.

Error Numbers

E01 — Invalid input channel

E10 — Invalid command

E12 — Invalid port number

E13 — Invalid parameter

E14 — Not valid for this configuration

E22 — Busy

E25 — Device not present

Error Response References

[14] = Commands that give an E14 (invalid command for this configuration) error if sent to a product whose current configuration does not support the command

[25] = Device not present (for example PVT wallplate not connected)

Commands and Responses

Using the Command and Response Tables

The SIS Command and Response tables from page 22 onwards lists the commands the PVS 405D recognizes as valid. The tables show the responses that are returned to the host with a description of the command function or command execution results.

NOTE: Upper and lower case text can be used interchangeably.

ASCII to HEX Conversion Table																Esc 1B	CR 0D	LF 0A
Space	20	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
0	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	40	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	60	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	|	7C	l	7C	}	7D	~	7E	DEL	7F

Figure 13. ASCII to Hexadecimal Character Conversion Table

Symbol Definitions

• = Space

↵ = Carriage return with line feed

¦ or **←** = Carriage return with no line feed

[X1] = Video and audio input selection, 1-5

[X2] = Audio input selection, 1-5, 7 (VoiceLift), 8 (Aux in)

[X3] = PVT wallplate type:
  0 = No PVT wallplate detected
  1 = PVT SW HDMI D wallplate is detected
  2 = PVT SW HDMI RGB D wallplate is detected

[X4] = Audio input
  1 = Active Program (post switch)
  7 = VoiceLift
  8 = Aux

[X10] = Audio Status:
  Signal detection threshold:
   0 = Off (signal level is too low to detect)
  1 = On (a signal of at least -60dBFS is present)

  Normal range:
   0 = Off (input level too low)
  1 = On (input is in the right range of at least -30dBFS is present)

   Peak level:
   0 = Off (audio input has been set up properly)
  1 = On (the level or gain is too high, audio clips/ distorts with -6dBFS and above is detected.
   Adjust the input level so only the Normal LED is blinking. The Peak LED should not turn on)

[X11] = Video input selection, 1-4 only

[X12] = Video signal status:
  0 = Video/TMDS signal not detected
  1 = Video/TMDS signal detected
  2 = Unknown

[X13] = Audio format:
  0 = Analog
  1 = Digital

[X14] = Audio mute to DSP:
  0 = Audio unmuted
  1 = Audio muted

[X15] = HDCP source status:
  0 = Source detected but not HDCP compliant
  1 = Source detected and is HDCP compliant
  2 = No source detected
  3 = Unknown

[X16] = HDCP sink status:
  0 = Source detected and is encrypted, sink is connected but not HDCP compliant
  1 = Source detected and is encrypted, sink is connected and is HDCP compliant
  2 = No sink detected
  3 = Source is not encrypted or detected, sink is connected but HDCP status is unknown

[X17] = HDMI input HDCP Authorization status:
  0 = Block HDCP encryption
  1 = Allow HDCP encryption (default)

X18 = EDID (DDC) values: (1-61), see table below

SIS X18 variables for EDID resolution/refresh rate combination (where X18 = 1 through 61)											
Resolution	Refresh (Hz)	Rate Type	Video Format	Audio Format	X18	Resolution	Refresh (Hz)	Rate Type	Video Format	Audio Format	X18
800x600	60	PC	VGA	N/A	1	800x600	60	PC	HDMI	2-ch	33
1024x768	60	PC	VGA	N/A	2*	1024x768	60	PC	HDMI	2-ch	34
1280x720	60	PC	VGA	N/A	3	1280x768	60	PC	HDMI	2-ch	35
1280x768	60	PC	VGA	N/A	4	1280x800	60	PC	HDMI	2-ch	36
1280x800	60	PC	VGA	N/A	5	1280x1024	60	PC	HDMI	2-ch	37
1280x1024	60	PC	VGA	N/A	6	1360x768	60	PC	HDMI	2-ch	38
1360x768	60	PC	VGA	N/A	7	1360x768	60	PC	HDMI	2-ch	39
1366x768	60	PC	VGA	N/A	8	1400x1050	60	PC	HDMI	2-ch	40
1400x1050	60	PC	VGA	N/A	9	1440x900	60	PC	HDMI	2-ch	41
1440x900	60	PC	VGA	N/A	10	1600x900	60	PC	HDMI	2-ch	42
1600x900	60	PC	VGA	N/A	11	1600x1200	60	PC	HDMI	2-ch	43
1600x1200	60	PC	VGA	N/A	12	1680x1050	60	PC	HDMI	2-ch	44
1680x1050	6+0	PC	VGA	N/A	13	1920x1200	60	PC	HDMI	2-Ch	45
1920x1080	60	PC	VGA	N/A	14	2048x1080	60	PC	HDMI	2-Ch	46
1920x1200	60	PC	VGA	N/A	15	480	60	HDTV	HDMI	2-Ch	47
2048x1080	60	PC	VGA	N/A	16	576p	50	HDTV	HDMI	2-Ch	48
800x600	60	PC	DVI	N/A	17	720p	50	HDTV	HDMI	2-Ch	49
1024x768	60	PC	DVI	N/A	18		60	HDTV	HDMI	2-Ch	50**
1280x720	60	PC	DVI	N/A	19	1080i	50	HDTV	HDMI	2-Ch	51
1280x768	60	PC	DVI	N/A	20		60	HDTV	HDMI	2-Ch	52
1280x800	60	PC	DVI	N/A	21	1080p	50/25	HDTV	HDMI	2-Ch	53
1280x1024	60	PC	DVI	N/A	22		50	HDTV	HDMI	2-Ch	54
1360x768	60	PC	DVI	N/A	23		60/24	HDTV	HDMI	2-Ch	55
1366x768	60	PC	DVI	N/A	24		60	HDTV	HDMI	2-Ch	56
1400x1050	60	PC	DVI	N/A	25	Output 1 (Automatic mode					57
1440x900	60	PC	DVI	N/A	26	User loaded Slot 1					58
1600x900	60	PC	DVI	N/A	27	User loaded Slot 2					59
1600x1200	60	PC	DVI	N/A	28	User loaded Slot 3					60
1680x1050	60	PC	DVI	N/A	29	User loaded Slot 4					61
1920x1080	60	PC	DVI	N/A	30	** Default digital output resolution					
1920x1200	60	PC	DVI	N/A	31						
2048x1080	60	PC	DVI	N/A	32						
* Default analog output resolution											

X19 = HDCP Input selection: inputs 1-4 only

X20 = EDID in HEX format: 128 or 256 Byte EDID raw HEX (text form)

X21 = Native resolution and refresh rate from selected EDID

X22 = Total pixels — ±255 of the default value (depends on input rate)

X27 = Pass-through mode:
    0 = Not in pass-through mode (default)
    1 = In pass-through mode

X28 = Power save mode/state:
    0 = auto power save and standby power mode off (power save off) (default)
    1 = set auto power save timer running, but not triggered
    2 = force auto power save on
    3 = force standby power save on
    4 = force network standby power save on (turn off network switch)

X29 = Temperature in °C. The response is 3 digits with leading zeros

X30 = Relay status (VLR 102 response)
    0 = Off
    1 = On

X31 = Contact closure input state (VLR 102 response)
    0 = Open
    1 = Closed

X32 = On/off status: 0 = off/disable; 1 = on/enable

X33 = Audio output volume: 000 to 100, default 80

X34 = Version number (listed to two decimal places, e.g. x.xx).

X35 = Input audio gain and attenuation: -18 to +24 dB V, in 1 dB steps.

X36 = PVT SW HDMI RGB D inputs 2 and 4 only
    2 = input 2
    4 = input 4

X37 = Pixel phase - 0-63 (32 = default)

X38 = Horizontal start - 0-255 (128 = default)

X39 = Vertical start - 0-255 (128 = default)

SIS command definitions

X100 = Default name: combination of model name and last 3 hex pairs of MAC address
(for example PVS-405D-06-DE-2E).

X104 = Hardware (MAC) address: (00-05-A6-xx-xx-xx)

X110 = Verbose/Response mode, (default = 0 for telnet connections, 1 for RS-232 and USB host
control).
0 = Clear/none;
1 = Verbose mode
2 = Tagged responses for queries
3 = Verbose mode and tagged responses for queries.

> **NOTE:** If tagged responses is enabled, all read commands will return the constant string +
> the data, like setting the value does.
> For example command: [Esc] CN ← response: lpn • X106 ↵

X112 = Baud rate:
0 = 9600 (Default)
1 = 19200
2 = 38400
3 = 115200

X118 = Unit name is a text string up to 24 characters drawn from the alphabet (A-Z), digits (0-9),
minus sign/hyphen (-). No blank or space characters are permitted as part of a name.
No distinction is made between upper and lower case. The first character must be an alpha
character. The last character must not be a minus sign/hyphen.

X120 = Firmware Query ('Q' commands)
*Q = Firmware and build number [<X.YY.ZZZZ>]
0Q = Verbose version information [<2Q> - <3Q> - < 4Q>] sum of responses
from 2Q-3Q-4Q.
1Q = Firmware version [<currently running code (X.YY)>]
2Q = Final stage bootloader (Uboot) version [<X.YY>]
3Q = Factory base code version [<factory base code (X.YY)>*]
4Q = Updated firmware version [<updated code version (X.YY)>*]

SIS Command and Response Table

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
Input selection			
Select a Video and audio input	X1!	Chn X1↵	Select video and audio from input X1.
View current input	!	X1↵	View current selected input X1.
	Verbose response	Chn X1↵	
Video mute (output)			
Mute video	1B	Vmt1↵	Mutes video and displays black video on the output.
Unmute video (default state)	ØB	VmtØ↵	Un mute video output (default).
View mute status	B	X32↵	View the mute status (0 = disabled, 1 = enabled - mute to black).
	Verbose response	Vmt X32↵	
Audio mute (output)			

> **NOTES:**
> - Mutes the embedded audio on the HDMI, line out and amplifier outputs. .
> - If audio mute is on and input is switched or volume is changed, the switcher unmutes automatically and firmware sends out the unsolicited unmute response.

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
Mute on	1Z	Amt1↵	Mute selected input.
Mute off	ØZ	AmtØ↵	Un-mute selected input (default).
View status	Z	X32↵	View mute status (0 = mute off, 1 = mute on).
	Verbose response	Amt X32↵	
Input mute control			

> **NOTE:** If active program mute is on and input is switched or the volume is changed, the switcher is unmuted automatically and an unsolicited unmute response is sent out by the firmware.

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
Set input audio mute	Esc X4*X32IMUT←	Imut X4*X32↵	Set the mute X32 for audio input X4.
View audio input mute status	Esc X4IMUT←	X32↵	View mute status X32 for audio input.
	Verbose response	IMUT X4*X32↵	

NOTE: X1 = Input number: 1 through 5
X4 = Audio Input: 1 = Active program (post switch), 7 = VoiceLift, 8 = Aux
X32 = On/Off: 0 = off/disable, 1 = on/enable (mute to black)

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
Input audio gain and attenuation			
NOTE: The VoiceLift and Aux input audio are independent and not affected by the output volume.			
Set specific input gain/attenuation	X2*X35G	InX2•AudX35↵	Set gain/attenuation on specified input X2 to X35 dB.
Increment specific input gain	X2+G	InX2•AudX35↵	Increment specific input X2 audio level (up).
Decrement specific input gain	X2-G	InX2•AudX35↵	Decrement sepcific input X2 audio level (down).
View specific input gain	X2G	X35↵	View specific input X2 audio level.
	Verbose response	InX2•AudX35↵	
View current input gain	G	X35↵	View current input audio level.
	Verbose response	InX2•AudX35↵	
Output volume			
Set specific volume	X33V	VolX33↵	Set volume to X33.
Increment	+V	VolX33↵	Increase volume.
Decrement	-V	VolX33↵	Decrease volume.
View volume	V	X33↵	View current volume setting.
	Verbose response	VolX33↵	
Front panel security lockout (Executive Mode)			
Enable Executive	1X	Exe1↵	Lock entire front panel.
Disable Executive mode	ØX	Exe0↵	Unlock front panel controls. All front panel adjustments can be made (default).
View Executive mode status	X	X32↵	View the current status: 0 = off [default], 1 = on
	Verbose response	ExeX32↵	
Pass-through mode (dedicated VoiceLift port)			
Configure pass-through mode	Esc 1CD←	Cpn1↵	Set VoiceLift port to pass-through mode.
Terminate pass-through mode	Esc ØCD←	Cpn0↵	Stop pass-through mode (default).
View pass-through mode	Esc CD←	X27↵	View pass-through mode
	Verbose response	CpnX27↵	

NOTE:
- X2 = Audio input number: 1 through 5, 7 (VoiceLift), 8 (Aux)
- X27 = Pass-through mode:
  - 0 = Not in pass-through mode (default)
  - 1 = In pass-through mode
- X32 = On/Off: 0 = off/disable, 1 = on/enable
- X33 = Audio output volume: 000 to 100 (-100dB to 0dB, in 1 dB steps), default 80
- X35 = Input audio gain and attenuation: -18 to +24 dB V, in 1 dB steps
  - Inputs 1-5 and 8; default is 0 dB
  - Input 7 (VoiceLift); default is -3 dB

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
Power save mode			
Power save off	[Esc]ØPSAV←	Psav[X28]↵	Turns off power save mode and sets timer to zero (default).
Enable Auto power save on	[Esc]1PSAV←	Psav[X28]↵	Timer start count but is not triggered. Switcher goes into auto power save mode when there is no active AV signal for 25 minutes.
Force auto power save on	[Esc]2PSAV←	Psav[X28]↵	Turns on auto power save mode.
Force standby power save on	[Esc]3PSAV←	Psav[X28]↵	Turns on standby power mode.
Force network standby power save on	[Esc]4PSAV←	Psav[X28]↵	Turns on standby power mode (network switch off).
View setting	[Esc]PSAV←	[X28]↵	View power save status.
	Verbose response	Psav[X28]↵	
Device Information Requests			
View internal temperature (ºC)	20S	[X29]↵	View internal temperature in degrees C.
	Verbose response	Sts2Ø*[X29]↵	
View fan status	21S	[X32]↵	View status of internal fan.
	Verbose response	Sts21*[X32]↵	
View switchable Signal, Normal, and Peak status	1S	Sig[X10]•Norm[X10]•Clp[X10]↵	View switchable audio Signal, Normal, and Peak status.
	Verbose response	StsØ1*Sig[X10]•Norm[X10]•Clp[X10]↵	
View VL receiver Mic input Signal, Normal, and Peak status	4S	Sig[X10]•Norm[X10]•Clp[X10]↵	View VoiceLIft receiver Mic input Signal, Normal, and Peak status.
	Verbose response	StsØ4*Sig[X10]•Norm[X10]•Clp[X10]↵	

NOTE: [X10] = On/off status: 0 = off/disable; 1 = on/enable
[X28] = Power save mode/state:
    0 = auto power save and standby power mode off (power save off) (default)
    1 = set auto power save timer running, but not triggered
    2 = Force auto power save on
    3 = Force standby power save on
    4 = Force network standby power save on (turn off network switch)
[X29] = Temperature in °C. The response is 3 digits with leading zeros
[X32] = On/off status: 0 = off/disable; 1 = on/enable

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
View Aux input Signal, Normal, and Peak status	5S	Sig[X10]•Norm[X10] •Clp[X10]↵	View Aux input audio Signal, Normal, and Peak status.
	Verbose response	Sts05*Sig[X10]•Norm[X10]• Clp[X10]↵	
View video signal presence	[Esc]LS←	Sig[X12]•[X12]•[X12]•[X12]↵	View which input video signals are present for selected wallplate.
	Verbose response	Sig[X12]•[X12]•[X12]•[X12]↵	

NOTE: Command is for selected PVT wallplate only. The non-selected PVT wallplate may be in sleep mode until it is switched to.

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
View detected audio format	[Esc]40STAT←	[X13]↵	View detected audio input format for curently selected input [X1].
	Verbose response	40Stat•[X11]*[X10]↵	
View VoiceLift status	34I	Rly[X30]•Sio[X31]↵	View information on VoiceLift status.
View PVT wallplate type	35I	PVTplate[X3]•[X3]↵	Identify wallplate type; PVT (plate 1)• (plate 2).
View audio mute to DSP	40S	[X14]↵	Unmutes when 2-Chn PCM is available only. Mutes when other formats are available.
	Verbose response	Sts40*[X14]↵	
View paging sensor status	42S	[X32]↵	View the priority paging sensor status.
	Verbose response	Sts42*[X32]↵	

NOTE:
[X1] = Input number: 1 through 5
[X3] = PVT wallplate type:
    0 = No PVT wallplate detected
    1 = PVT SW HDMI D wallplate is detected
    2 = PVT SW HDMI RGB D wallplate is detected
[X10] = On/off status: 0 = off/disable; 1 = on/enable
[X11] = Video input selection, 1-4 only
[X12] = Video signal status:
    0 = Video/TMDS signal not detected
    1 = Video/TMDS signal detected
    2 = Unknown
[X13] = Audio format:
    0 = Analog
    1 = Digital
[X14] = Audio mute to DSP:
    0 = Audio unmuted
    1 = Audio muted
[X30] = Relay status (VLR 102 response)
    0 = Off
    1 = On
[X31] = Contact closure input state (VLR 102 response)
    0 = Open
    1 = Closed
[X32] = On/off status: 0 = off/disable; 1 = on/enable

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
EDID Minder			

NOTES:
- The switcher and PVT wallplate have two default EDIDs: 720p @ 60 Hz (digital), and 1024x768 @ 60 Hz (analog).
- The default EDID of 720p @ 60Hz, 2-CH is always present at inputs 1-4 when no PVT wall plates are detected.
- The firmware automatically uses default EDID of 1024x768 @ 60Hz for inputs 2 and 4 when a PVT SW HDMI RGB D wall plate is detected
- See the EDID table on page 19 for [X18] SIS symbol definitions.

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
Assign EDID to inputs	[Esc]A[X11]*[X18]EDID←	EdidA[X11]*[X18]↵	Assign EDID resolution and refresh rate [X18] for input [X11].
View assigned EDID data	[Esc]A[X11]EDID←	EdidA[X11]*[X18]↵ EdidA[X11]*[X18]↵	View assigned EDID resolution and refresh rate [X18] for input [X11]. *Verbose mode response*
Capture display EDID to custom (user) slot (1-4)	[Esc]S[X18]EDID←	EdidS[X18]↵	Capture display EDID to [X18].
View/read EDID in HEX format	[Esc]R[X11]EDID←	[X20]↵	View assigned EDID resolution and refresh rate [X20] in HEX format.
View/read EDID native resolution	[Esc]N[X11]EDID←	[X21]↵	View assigned EDID native resolution [X21].
HDCP status			
View input HDCP	[Esc]I[X19]HDCP←	HdcpI[X19]*[X15]↵	Query the input HDCP status [X15] of the current input [X19].
View output HDCP	[Esc]OHDCP←	HdcpO[X16]↵	Query the HDCP status [X16] of the HDMI output.
View all HDMI input HDCP	[Esc]IHDCP←	Hdcp•[X15]•[X15]•[X15]•[X15]↵	Query the HDCP status [X15] of all the HDMI inputs (selected PVT wallplates).
HDCP input authorization (valid for HDMI inputs only)			
HDCP Authorized device on	[Esc]E[X19]*1HDCP←	HdcpE[X19]*1↵	Turn HDCP Authorized on for input [X19] (default). Enables encryption support.
HDCP Authorized device off	[Esc]E[X19]*ØHDCP←	HdcpE[X19]*Ø↵	Turn HDCP Authorized device off for input [X19]. Disables encryption support.
Query HDCP Authorized Device status	[Esc]E[X19]HDCP← *Verbose response*	[X17]↵ HdcpE[X19]*[X17]↵	Query HDCP Authorized device status for input [X19].

NOTE: [X11] = Input selection: 1 to 4
[X15] = HDCP source status:
   0 = Source detected but not HDCP compliant,
   1 = Source detected and is HDCP compliant,
   2 = No source detected, 3 = Unknown
[X16] = HDCP sink status:
   0 = Source detected and is encrypted, sink is connected but not HDCP compliant,
   1 = Source detected and is encrypted, sink is connected and is HDCP compliant,
   2 = No sink detected,
   3 = Source is not encrypted or detected, sink is connected but HDCP status is unknown
[X17] = HDMI input HDCP Authorization status:
   0 = Block HDCP encryption,
   1 = Allow HDCP encryption (default)
[X18] = EDID values. See the table on page 19 for values.
[X19] = HDCP input selection; inputs 1-4 only.
[X20] = EDID in HEX format: 128 or 256 Byte EDID raw HEX (text form)
[X21] = Native resolution and refresh rate from selected EDID.

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
Special functions			
Set lineout mode			
Set lineout to variable	55*1#	LineOut*X↵	Set lineout port mode to variable (X=1, default).
Set lineout to fixed	55*2#	LineOut*X↵	Set lineout port mode to fixed (X=2).
View lineout mode	55#	LineOut*X↵	View lineout port mode (X= 1 or 2).
Set audio output mode			
Set audio output mode to dual mono	18*1#	PreAmpMod*X↵	Set audio output mode to dual mono (X=1, default).
Set audio output to fixed	18*2#	PreAmpMod*X↵	Set audio output mode to stereo (X=2).
View audio output mode	18#	PreAmpMod*X↵	View audio output mode (X= 1 or 2).
Paging sensor hold time			
Set paging sensor hold time	75*x#	PageDly*X↵	Set paging hold time (x = 0 to 8 seconds) in 1 second steps: default = 3 (enable), 0 = 0 seconds (disabled), 1 = 1.0 second, 2 = 2.0 seconds...8 = 8.0 seconds.
View paging sensor hold time	75#	PageDly*X↵	View paging hold time (where x = 0 to 8)
Paging sensor sensitivity			
Set paging sensor sensitivity	83*x#	PageSen*X↵	Set paging sensitivity (where x = 0 - 100, 50 = default).
View paging sensor sensitivity	83#	PageSen*X↵	View paging sensitivity (where x = 0 to 100)
Picture adjustment (PVT SW HDMI RGB D inputs 2 and 4 only)			
Set pixel phase value	[Esc][X36]*[X37]PHAS←	Phas[X36]*[X37]↵	Set pixel phase [X37] for [X36].
Increment pixel phase value	[Esc][X36]+PHAS←	Phas[X36]*[X37]↵	Increase pixel phase to [X37] for [X36].
Decrement pixel phase value	[Esc][X36]-PHAS←	Phas[X36]*[X37]↵	Decrease pixel phase to [X37] for [X36].
View pixel phase value	[Esc][X36]PHAS← *Verbose response*	[X37]↵ Phas[X36]*[X37]↵	View pixel phase [X37] for [X36].
Set total pixel value	[Esc][X36]*[X22]TPIX←	Tpix[X36]*[X22]↵	Set total pixel [X22] for [X36].
Increment total pixel value	[Esc][X36]+TPIX←	Tpix[X36]*[X22]↵	Increase total pixel to [X22] for [X36].
Decrement total pixel value	[Esc][X36]-TPIX←	Tpix[X36]*[X22]↵	Decrease total pixel to [X22] for [X36].
View total pixel value	[Esc][X36]TPIX← *Verbose response*	[X22]↵ Tpix[X36]*[X22]↵	View total pixel [X22] for [X36].
Set horizontal start value	[Esc][X36]*[X38]HSRT←	Hsrt[X36]*[X38]↵	Set horizontal start at [X38] for [X36].
Increment horizontal start value	[Esc][X36]+HSRT←	Hsrt[X36]*[X38]↵	Increase horizontal start to [X38] for [X36].

NOTE: [X22] = Total pixels — ±255 of the default value (depends on input rate)
[X36] = PVT SW HDMI RGB D inputs 2 and 4 only
    2 = input 2
    4 = input 4
[X37] = Pixel phase - 0-63 (32 = default)
[X38] = Horizontal start - 0-255 (128 = default)

Command	ASCII (Telnet) (host to switcher)	Response (switcher to host)	Additional Description
Decrement horizontal start value	Esc X36 - HSRT ←	Hsrt X36 * X38 ↵	Decrease horizontal start to X38 for X36.
View horizontal start value	Esc X36 HSRT ←	X38 ↵	View horizontal start X38 for X36.
	Verbose response	Hsrt X36 * X38 ↵	
Set vertical start value	Esc X36 * X39 VSRT ←	Vsrt X36 * X39 ↵	Set vertical start at X39 for X36.
Increment vertical start value	Esc X36 + VSRT ←	Vsrt X36 * X39 ↵	Increase vertical start to X39 for X36.
Decrement vertical start value	Esc X36 - VSRT ←	Vsrt X36 * X39 ↵	Decrease vertical start to X39 for X36.
View vertical start value	Esc X36 VSRT ←	X39 ↵	View vertical start X39 for X36.
	Verbose response	Vsrt X36 * X38 ↵	

Bi-directional serial data port

> **NOTE:** This command sets baud rate only.

Command	ASCII (Telnet) (host to switcher)	Response (switcher to host)	Additional Description
Configure parameters	Esc X112 CP ←	Ccp X112 ↵	Set rear serial port baud rate
View parameters	Esc CP ←	X112 ↵	
	Verbose response	Ccp X112 ↵	

Firmware version requests

Command	ASCII (Telnet) (host to switcher)	Response (switcher to host)	Additional Description
Query firmware version	Q or 1Q	x.xx ↵	Gives the number of the currently running version of the firmware.
Query full firmware version	*Q	x.xx.xxxx ↵	Gives the number and build of the currently running version of the firmware.
Query verbose version information	ØQ	All responses from 2Q-3Q-4Q ↵	Show bootstrap, factory-installed, and updated firmware versions. (See below.)
Example:	1Q	VerØ1*1.ØØ	
Query bootstrap version	2Q	X120 ↵	The bootstrap firmware is not user-replaceable. This information may be needed for troubleshooting.
Example:	2Q	VerØ2*1.ØØ	
Query factory firmware version	3Q	X120 ↵	Factory-installed firmware is not user replaceable. This firmware is the version the processor reverts to after a mode 1 reset
Example:	3Q	VerØ3*1.ØØ	In this example, the factory firmware version is 1.00 for PVS 405D,.

> **NOTE:** X36 = PVT SW HDMI RGB D inputs 2 and 4 only
> 2 = input 2
> 4 = input 4
> X38 = Horizontal start - 0-255 (128 = default)
> X39 = Vertical start - 0-255 (128 = default)
> X112 = Baud Rate:
> 0 = 9600 (Default)
> 1 = 19200
> 2 = 38400
> 3 = 115200
> X120 = Firmware Query ('Q' commands)
> *Q = Firmware and build number [<X.YY.ZZZZ>]
> 0Q = Verbose version information [<2Q> - <3Q> - < 4Q>] sum of responses from 2Q-3Q-4Q.
> 1Q = Firmware version [<currently running code (X.YY)>]
> 2Q = Final stage bootloader (Uboot) version [<X.YY>]
> 3Q = Factory base code version [<factory base code (X.YY)>*]
> 4Q = Updated firmware version [<updated code version (X.YY)>*]

Command	ASCII (Telnet) (host to switcher)	Response (switcher to host)	Additional Description
Query updated firmware version	4Q	`X120`↵	Use this command to find out which version of firmware has been uploaded into the processor post-factory.
Example:	4Q	`Ver04*1.00`	In this example, firmware version is 1.00.
Information requests			
Request switcher part number	N	`60-1235-01`↵	Show switcher part number.
	Verbose response	`Pno60-1235-01`↵	
Request AV input number	I	`Vid`X1`•Aud`X1↵	Show current active video and audio inputs.
Request model name	1I	`PVS 405D`	Show device name
	Verbose response	`Inf01*PVS 405D`↵	
Request model description	2I	`PoleVault Digital Switcher`	Show device description
	Verbose response	`Inf02*PoleVault Digital Switcher`↵	
Read hardware address (MAC)	`Esc`CH←	`X104`↵	`X104` = hardware media access control (MAC) address (xx-xx-xx-xx-xx-xx).
	Verbose response	`Iph•xx-xx-xx-xx-xx-xx`↵	
Set verbose mode[24]	`Esc`X110`CV`←	`Vrb`X110↵	Set verbose mode.
Read verbose mode	`Esc`CV←	`X110`↵	
	Verbose response	`Vrb`X110↵	
Set unit name	`Esc`X118`CN`←	`Ipn•`X118↵	Set the unit name. (X118 up to 24 alphanumeric characters). Special characters (spaces or blanks) not allowed.
Set unit name to factory default	`Esc`•CN←	`Ipn•`X100↵	Set the unit name back to default. Default name X100 is a combination of model name and last 3 hex pairs of MAC address (for example PVS-405D-06-DE-2E).
View unit name	`Esc`CN←	`X118`↵	View the current unit name (X118).
Reset (Zap) command			
Reset all device settings to factory	`Esc` ZXXX←	`Zpx`↵	`Esc` ZXXX command resets all video and audio settings

NOTE: X1 = Video and audio input selection, 1-5

X100 = Default name: combination of model name and last 3 hex pairs of MAC address (for example PVS-405D-06-DE-2E).

X104 = Hardware (MAC) address: (00-05-A6-xx-xx-xx)

X110 = Verbose/Response mode, (default = 0 for telnet connections, 1 for RS-232 and USB host control). 0 = Clear/none, 1= Verbose mode, 2 = Tagged responses for queries, 3 = Verbose mode and tagged responses for queries.

X118 = Unit name is a text string up to 24 characters drawn from the alphabet (A-Z), digits (0-9), minus sign/hyphen (-). No blank or space characters are permitted as part of a name. No distinction is made between upper and lower case. The first character must be an alpha character. The last character must not be a minus sign/hyphen.

X120 = Firmware Query ('Q' commands)

*Q = Firmware and build number [<X.YY.ZZZZ>]

0Q = Verbose version information [<2Q> - <3Q> - < 4Q>] sum of responses from 2Q-3Q-4Q.

1Q = Firmware version [<currently running code (X.YY)>]

2Q = Final stage bootloader (Uboot) version [<X.YY>]

3Q = Factory base code version [<factory base code (X.YY)>*]

4Q = Updated firmware version [<updated code version (X.YY)>*]

Using the Extron Product Configuration Software

The Extron PVS 405D Product Configuration Software (PCS) offers another way to control the PVS 405D via USB or rear panel RS-232 connection, in addition to using the SIS commands.

This section describes installation, communication, and control. The topics include:

- **Installing the Software**
- **Starting the PVS 405D Product Configuration Software**
- **Using the PVS 405D Product Configuration Software — Menus**
- **Using the PVS 405D Product Configuration Software — Pages**

The graphical interface includes the same functions as those on the device front panel with additional features that are only available through the software.

The Configuration Software is compatible with Windows XP and Windows 7, and Windows 8. The software program is included on the Extron software DVD. Updates can be downloaded from the Extron web site (www.extron.com).

Installing the Software

The PCS software can be downloaded from the Extron web site and installed onto the hard drive of a connected PC.

Installation from the Website

1. On the Extron web site (**www.extron.com**), select the `Download` tab. The Download Center screen appears.

2. On the Download Center screen, select `PCS` within `Software` menu from the left side-bar.

3. Click `Download Now`.

4. Follow the on-screen instructions to download the program to your PC.

Starting the PVS 405D Product Configuration Software

> **NOTE:** The following pages cover PCS version 1.x installations only. If you have installed PCS version 2.x, open the embedded PCS Help file and follow the instructions to access and configure your switcher.

1. Locate and click `C:\Program Files(x86)\Extron\Extron PCS\ EAF.exe.` This opens the PCS program.

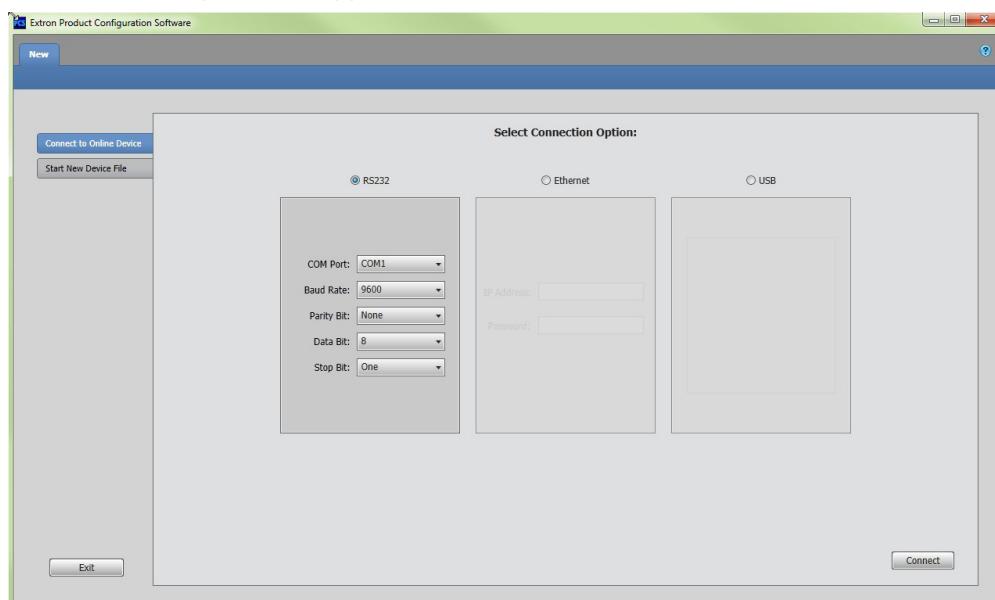   Alternatively, if an icon was installed on the desktop, PCS can be started by double-clicking on the icon.

   The PCS startup window appears.

Figure 14. PCS Startup Window

2. Select the desired device either:
   a. from the Start New Device file tab, then the Device Selection list, using the Device Filters (Device Types, Signal Type, and Audio Signal drop-down menus) to narrow down the list, or
   b. In the **Device Name** field, enter the name of the device, or
   c. Click on **Connect to Online Devices, Start New Device File**.

      See the *PVS 405D Product Configuration Software Help* file for full details.

3. Click **Open Device, Connect**, or **Select Device** as required. A new tab opens from which you can configure the device.

> **NOTES:**
> - Using **Start New Device File** opens the program in emulation mode (shown with gray button on tab).
> - Using **Connect to Online Devices** opens the program in live mode (shown with green button on tab).
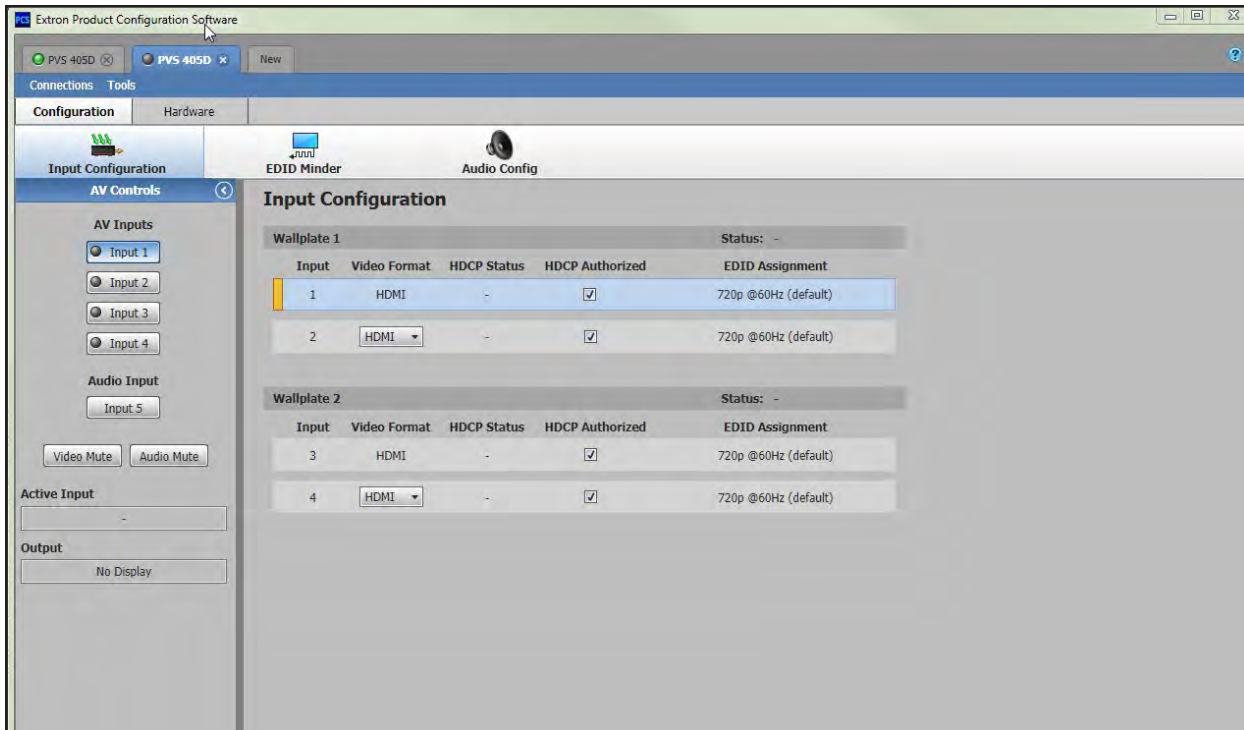> - Click on the blue icon in the top right corner of the window to open the embedded PCS Help file.
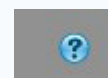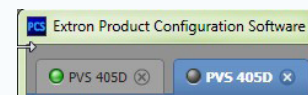
Figure 15. New Device Page in Emulate/Offline Mode

Using the PVS 405D Product Configuration Software — Menus

NOTE: For detailed software navigation open the *PVS 405D Product Configuration Software Help* file.

There are two main menus shown at the top of the window. These are **Connections** and **Tools**.

Connections Menu

This menu has five options: **Connect**, **Disconnect**, **Save Device**, **Load Different Config File to this Device**, and **Exit Application**.

Connect

This allows the user to connect to the device that is already set up in emulation mode on the configuration page. The page goes from emulation mode to live mode and shows the connected devices' current configuration settings. The tab indicator changes from gray (not connected) to green (connected).

NOTE: If a device is already connected, the Connect option is disabled until the device is disconnected or the connection times out.

Disconnect

This allows the user to disconnect from the connected device and return to emulation mode.

Save Device

All audio, video, input configuration settings, HDCP settings, EDID Minder settings and audio settings from a PVS 405D can be exported to a PC using the Windows Control Program. This exported device file (*.eaf) can be saved as a backup, or be used to "clone" settings from one PVS 405D to others.

To Save a Configuration:

1. Select **Save Device** from the "**Connections**" drop-down menu.

2. Select a location on the PC to save the configuration, and provide a folder name.

3. Click **Save**, and allow the process to complete.

Load Different Config File to this Device

When loading a different configuration file to the PVS 405D, all the audio, video, and communication settings saved in a previous configuration are uploaded to the currently connected device.

1. Select **Load Different Config File to this Device** from the "**Connections**" drop-down menu.

2. Navigate to the desired previously saved configuration file (*. eaf file) on the PC.

3. Select **Next**, and allow the process to complete. The PVS 405D will automatically re-boot and apply the restored settings.

Exit Application

Select this to close the software program.

Tools Menu

This menu has one option: **Update Firmware**.

> **NOTE:** Although visible, Backup and Restore is grayed out and not available for the PVS 405D.
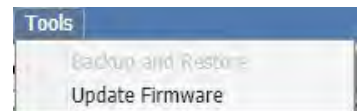
Update Firmware

This allows the user to upload the latest firmware to the device.

> **NOTE:** The latest device-specific firmware is available at **www.extron.com** to download to a PC connected to the device.

To update the firmware:

1. From the Tools menu, select Update Firmware.

> **NOTE:** Firmware can only be updated via the front panel USB connection...

If you are already connected to the device an Update Firmware dialog box opens, requesting disconnection.
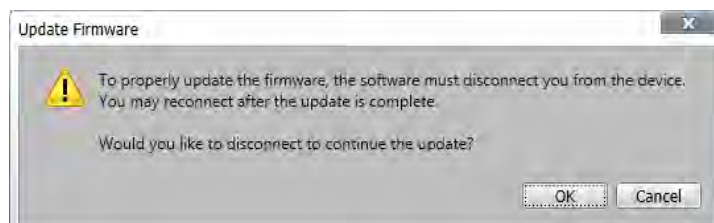
If you are not connected to the device, the Update Firmware submenu is not available.

2. Click **OK**. A separate window opens and the details of the device and current installed firmware is acquired.
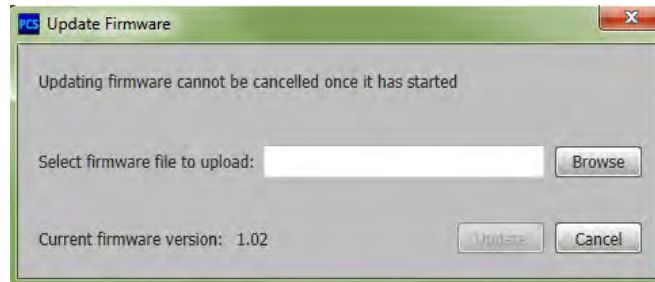
3. Browse to and select the downloaded firmware file. Valid firmware files have an S19 file extension.

4. Click **Open**. This returns you to the Update Firmware dialog box.

5. Click **Update**. The progress bar shows the progress of the firmware upload to the device. After uploading is completed, the device restarts. Reconnection to the device must be made to enable live configuration.

Using the PVS 405D Product Configuration Software — Pages

There are two main pages for configuring the PVS 405D: the Configuration page and the Hardware page.

Configuration Pages

NOTE: From the Hardware page, click on the **Configuration** tab [Configuration].

The Configuration pages options are:
- • Input Configuration
- • EDID Minder
- • Audio Configuration

Figure 16. Global Navigation Bar for the Configuration Page

The browser screen is set out as two sections. These are AV Controls on the left, and the options page on the right.

AV Controls Panel

NOTE: This panel section can be hidden or revealed by clicking on the section handle (see image at right).

The AV Controls panel is used to control AV settings such as input selection or muting video and audio signals.
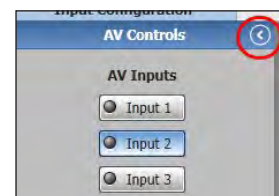
Figure 17. AV Controls Panel

AV input buttons (inputs 1-5)

Click on these to select an input as desired. As a new one is selected, the summary within the panel changes to reflect the new input and output status. Input 5 is audio only and carries no video signal.
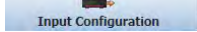
Video and audio mute buttons

Select **Video Mute** to mute only the video signal. The button turns red when mute is applied.

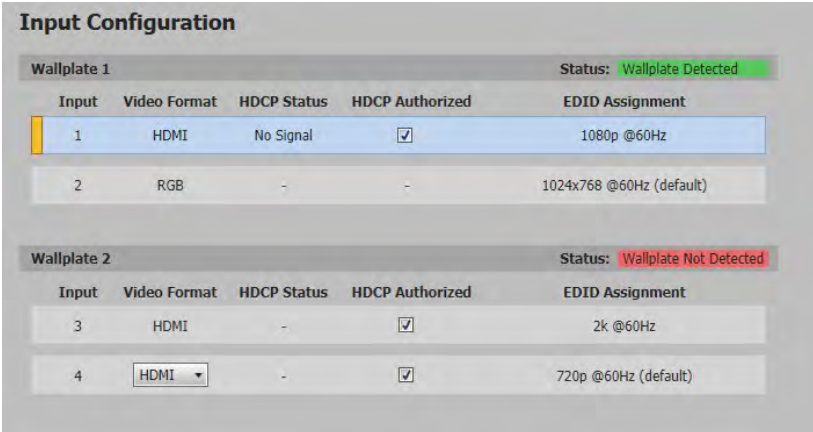Select **Audio Mute** to mute only the audio. The button turns red.

To unmute any signal, click on the appropriate button. The button reverts to the default color, indicating the signal has been unmuted.

Input Configuration Page

Click on this button [Input Configuration] to open to this page.

Input Configuration panel

The Input Configuration panel consists of fields for each of the inputs. These include; input number video format, HDCP Status, HDCP Authorized, and EDID assignment. Only Video Format and HDCP Authorized are configurable.

Figure 18. Input Configuration Panel

Video Format

For inputs 2 and 4, **HDMI or RGB** are the available signal type.

For input 1 and 3, **HDMI** is the only available signal type.

HDCP Status

This shows the HDCP signal status for the digital inputs (1-4) only.

HDCP Authorized

Select the **HDCP Authorized** check box for inputs 1-4 in order to have the input report as an HDCP Authorized device. If the box is not checked the source will be blocked from encrypting its output. This may result in some content not being passed to the output.

> **NOTE:** The **HDCP Authorized** is only available for HDCP inputs.

EDID Assignment

This shows the EDID resolution and rate for the digital inputs (1-4) only.

Output format

Output format for all video signals is always HDMI.

EDID Minder Page

Extron EDID Minder is an EDID management process that automatically manages the EDID information between a digital display device and one or more input sources.

Click on this button [EDID Minder] to open the EDID Minder page.

From this page an EDID data set can be assigned to any input with an RGB or an HDMI or DVI input type. The currently assigned EDID properties can be viewed and EDID files can be loaded to and from the PVS 405D.
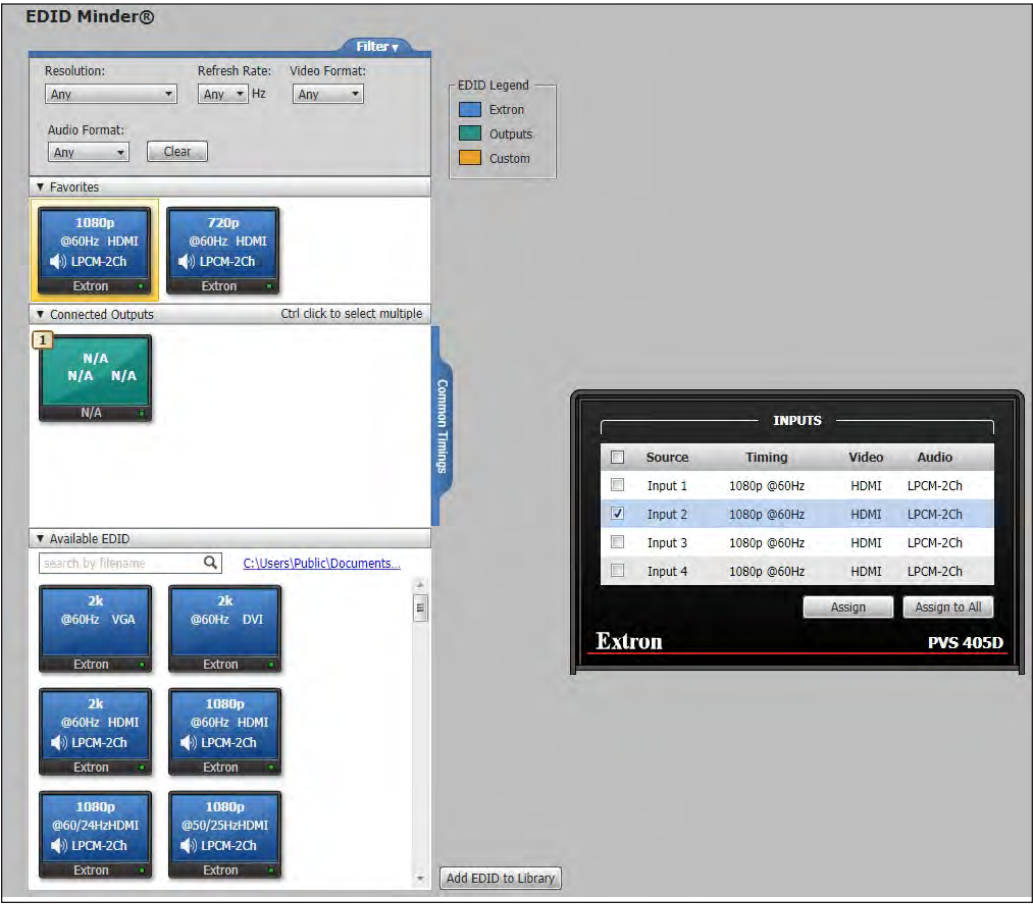

Figure 19. EDID Minder Page

The EDID Minder screen displays a table of EDIDs and connected output devices, grouped as favorites, connected outputs, and available EDIDs. These are visually shown as colored output display icons: factory default EDIDs are blue, connected output devices are green, and custom loaded or saved EDIDs are yellow.

The EDID properties currently assigned to each input are displayed in the table of inputs. Audio and video formats for each input are also displayed. The audio input format listed in an EDID is determined by the Audio Input Format on the Audio Configuration page. Video input format is configured on the Input/Output Configuration page.

Assigning EDIDs

To assign EDID to selected inputs:

1. From the inputs screen (table of inputs) on the right, select the desired input or inputs (see figure below).

2. From the table, select an available EDID (represented by a blue, green, or yellow output display icon).

3. Click the **Assign** button to assign EDID to the selected input or inputs.
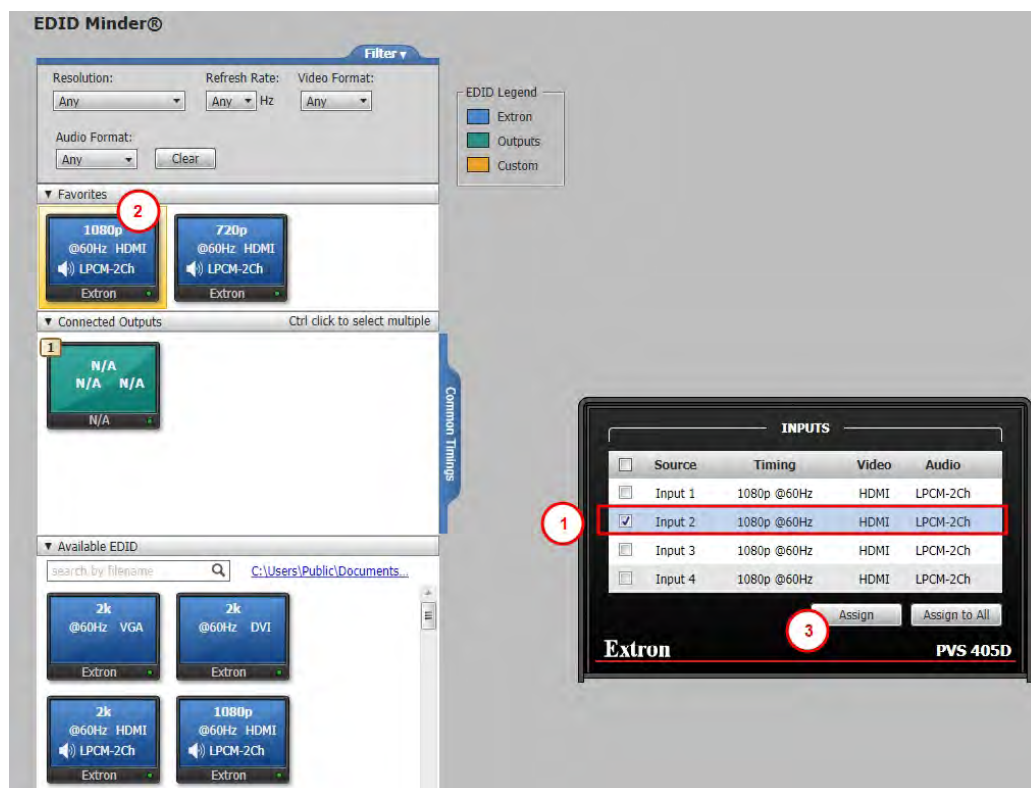

Figure 20. Assigning EDIDs

> **NOTE:** If you do not select any inputs but still click **Assign**, an error message is displayed.

To assign EDID to all inputs:

1. From the EDID table, select an available EDID (represented by a blue, green, or yellow output display icon).

2. Click the **Assign All** button.

> **NOTE:** If you select **Assign All**, all input boxes, checked or unchecked, will be ignored and the EDID will be assigned to all inputs.

Audio Settings Page

Using this page each of the audio inputs can be configured, including setting the input format and the gain (for analog inputs only). Mic, Aux, and Paging input settings can also be configured.

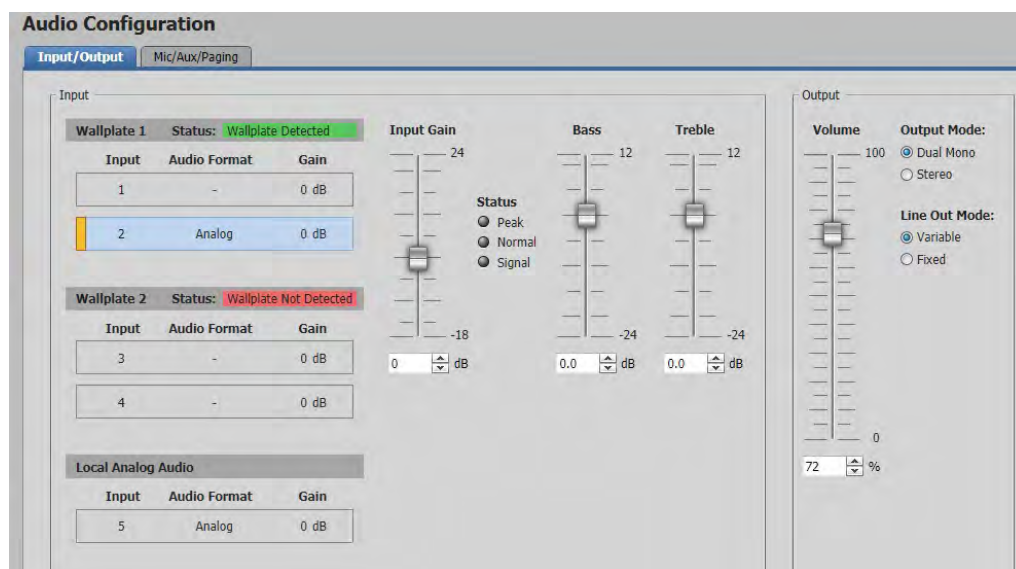Click on this button [Audio Config] to open the Audio Config page.

Figure 21. Audio Config Page

Input/ Output

To configure audio inputs:

1. Using the input buttons in the AV Controls panel to the left, select the applicable input.

2. Click and drag the handle of the `Gain` slider, or click the up ▲ and down ▼ arrows in the field below the slider, or enter a value in the field.

   > **NOTE:** You can only adjust the gain and attenuation for an input that is in analog or Auto format. Gain only affects analog inputs

3. Click and drag the handle of the `Bass` slider, or click the up ▲ and down ▼ arrows in the field below the slider, or enter a value in the field.

4. Click and drag the handle of the `Treble` slider, or click the up ▲ and down ▼ arrows in the field below the slider, or enter a value in the field.

5. Select the Output mode (Dual Mono or Stereo) or the Line Out Mode (Variable or Fixed) for volume adjustment.

6. Click and drag the handle of the `Volume` slider or click the up ▲ and down ▼ arrows in the field below the slider, or enter a value in the field.

Mic/Aux/Paging

Using this page to set the input gain, and where desired, ducking can be enabled and settings configured for both VoiceLift and Aux inputs. In addition the Page Sensor sensitivity and hold time can be set from this page.
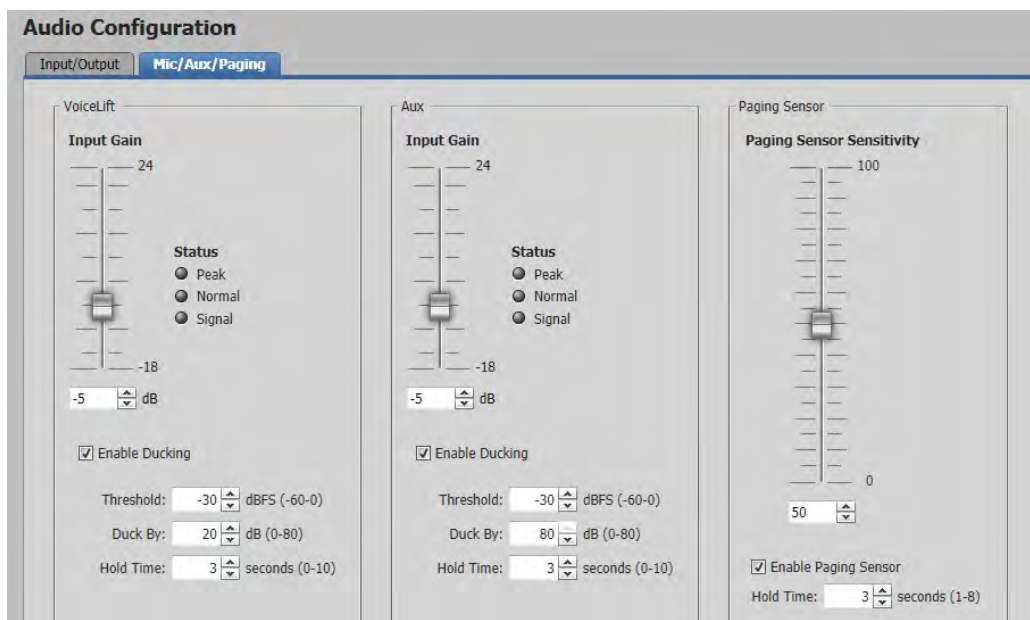

Figure 22. Mic/Aux/Paging Config Page

To set VoiceLift or Aux Input Gain and Ducking Settings:

To adjust audio input gain (-18 to +24 dB), click and drag the handle of the Input Gain slider, or click the Up and Down Arrows in the field below the slider, or enter a value in the field. The Peak, Normal, or Signal LEDs will light as each threshold is reached as the input gain is adjusted.

To enable and configure set the ducking settings:

1. Select the Enable Ducking checkbox. The ducking setting fields become active.

> **NOTE:** When the Enable Ducking check box is left unchecked, then the Threshold, Duck By, and Hold Time settings are grayed out and are not available

2. To set Threshold level, click the Up and Down Arrows in the field, or enter a value. The range is 0 to -60 dBFS.
3. To set the Duck By level, click the Up and Down Arrows in the field, or enter a value. The range is 0 to +80 dB.
4. To set the Hold Time (in seconds), click the Up and Down Arrows in the field, or enter a value. The range is 0-10 seconds.

To set Paging Sensor Sensitivity and Hold Time Setting:

To adjust Paging Sensor sensitivity (0 to 100):

Click and drag the handle of the Input Gain slider, or click the Up and Down Arrows in the field below the slider, or enter a value in the field.

To adjust Paging Sensor Hold Time in seconds:

1. Select the Enable Paging Sensor checkbox. The Hold Time field become active.
2. Click the Up and Down Arrows in the field, or enter a value in the field. The range is 1 to 8 seconds.

Hardware Pages

Click on the Hardware tab [Hardware] to open these pages.

The Hardware pages options are:
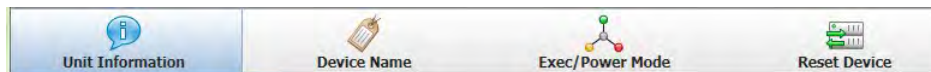• Unit Information • Device Name • Executive/Power Mode • Reset Device

Figure 23. Global Navigation Bar for the Hardware Page

Unit Information Page

This page gives a non-configurable view of information about the connected unit. These include part number, model name and description, firmware version and build number.

Click on this button [Unit Information] to open the page.

Figure 24. Unit Information Page

Device Name Page

This page allows the user to enter a name for the device or reset it to the default.

Click on this button [Device Name] to open the page.

Figure 25. Device Name Page

Assigning a Device Name

> **NOTE:** The device name can only contain alpha-numerical characters and dashes and hyphens.

1. Click the Hardware button above the global navigation bar.
2. Click the Device Name icon on the global navigation bar. The Device Name screen dialog box opens.

3. Enter a name for the device. The name may be up to 24 alphanumeric characters in length.

4. Click Apply.

To reset the name of the device, click Reset to Default. The default name is the model name followed by the last six digits of the device MAC address (see image above).

Executive/Power Mode Page

This page allows the user to set the executive mode and power mode for the device.
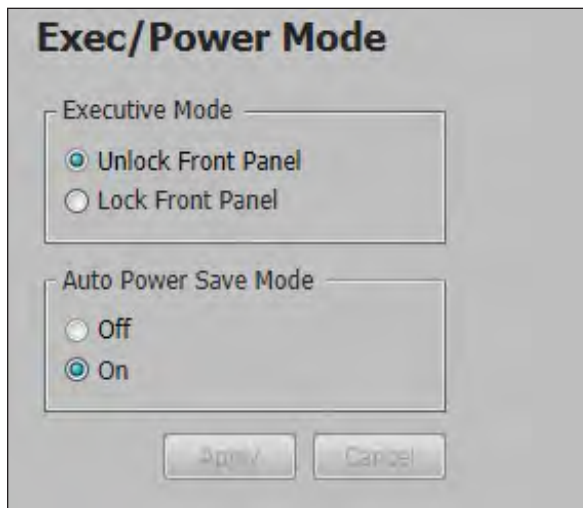
Click on this button to open the page.

Figure 26. Executive/Power Mode Page

Executive Mode

Executive mode locks the front panel functions of the PVS 405D, and there are two executive mode options available:

• Unlock Front Panel (default)

• Lock Front Panel

To set executive mode:

1. Click the radio button for the desired lockout mode.

2. Click `Apply`.

Auto Power Save Mode

When on is selected, the auto power save mode turns off the power amplifier when audio is not detected for 25 consecutive minutes. Default is auto power save mode off

To set the power mode:

1. Click the radio button for the desired auto power save mode (`Off` or `On`).

2. Click `Apply`.

Reset Device Page

This page allows the user to reset the device to factory defaults.

Click on this button [Reset Device] to open the page.

Reset Device

Resetting the device will restore all device settings to factory defaults
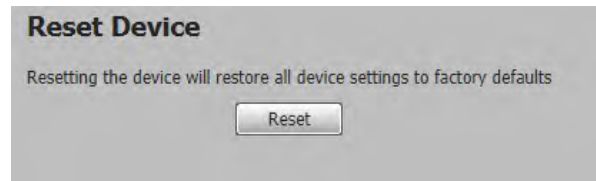
[Reset]

Figure 27. Reset Device Page

To reset the device:

1. Click **Reset**. A confirmation dialog box opens.

2. In the dialog box, click **Reset** to continue with the reset, or **Cancel** to abort the reset.

3. A confirmation dialog box appears confirming the device has been reset.

Connector Wiring

This section of the manual discusses the connector wiring for a PVS 405D device. Topics covered include:

- **Speaker Configuration**
- **TP Cable Termination**
- **Power Supply Connector Wiring**
- **RS-232 Connector Wiring**
- **Input 5 Connector Wiring**

Speaker Configuration

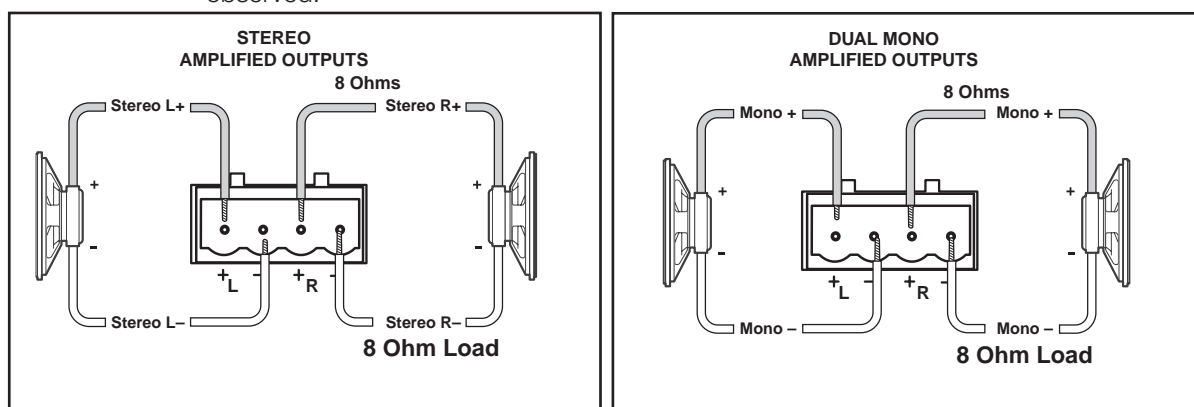When setting up a speaker configuration, the correct speaker impedance loading must be observed.

Figure 28. Stereo or Dual Mono Output using In Line Speaker Wiring
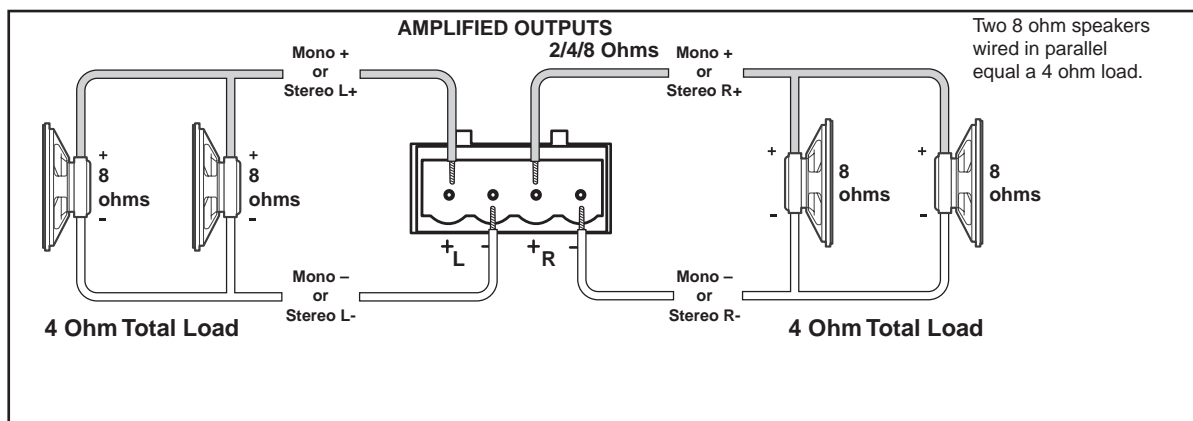

Figure 29. Stereo or Dual Mono Output using Parallel Speaker Wiring

NOTE: By default, the amplifier is set for dual mono output. Use the Extron Product Configuration Software or SIS commands to change the setting to stereo if desired..

Terminating the speaker cable

To terminate the cable, strip the end of the cable 0.2 inch (5 mm) and secure the wires into the supplied 4-pole captive screw connector.
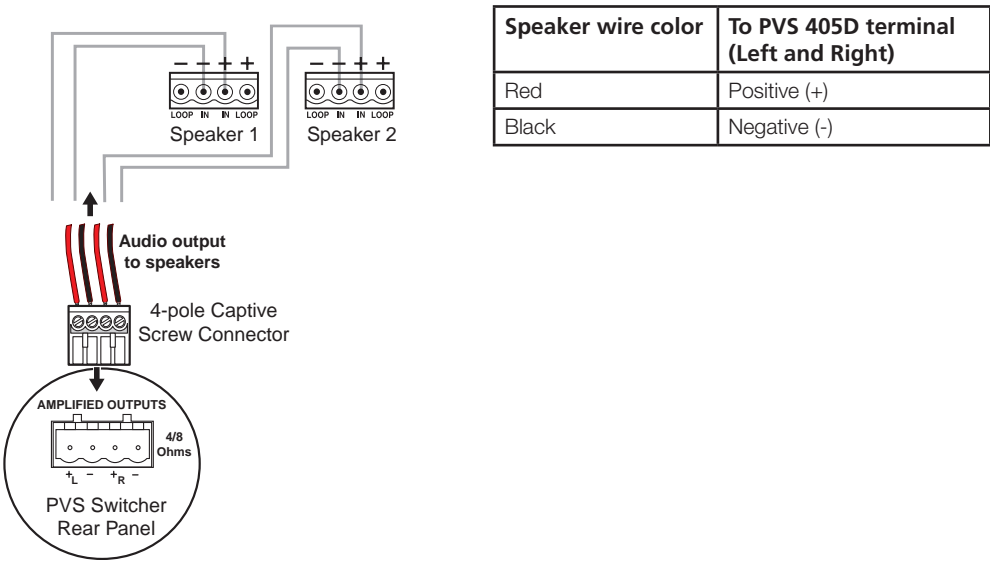

Speaker wire color	To PVS 405D terminal (Left and Right)
Red	Positive (+)
Black	Negative (-)

Figure 30. Wiring the Audio Output Connector

TP Cable Termination and Recommendations

The figure below details the recommended termination of both ends of TP cables with RJ-45 connectors in accordance with the **TIA/EIA T568B** wiring standard.
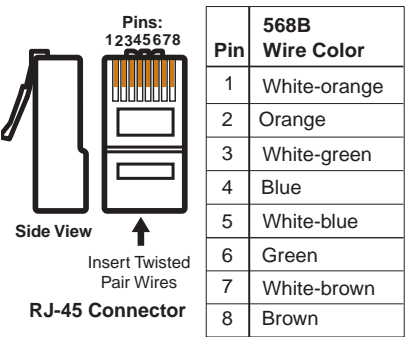

Pin	568B Wire Color
1	White-orange
2	Orange
3	White-green
4	Blue
5	White-blue
6	Green
7	White-brown
8	Brown

Figure 31. TP Cable Termination

ATTENTION: The PoleVault signal transmission method is specific for PVS 405D switchers working with PVT digital wallplates. **DO NOT** connect the input ports to an MTP system or to an Ethernet/LAN or data transmission system.

Power Supply Wiring

> **NOTE:** Use only the supplied 12 V, 4 A power supply for this switcher. The PVS 405D power supply can support a typical system: for example, a PVS 405D, 2 PVT Wallplates, 2 or 4 speakers, an MLC 104 IP Plus with an IRCM DV+, and a VoiceLift Microphone system. If an additional SCP 104 is used, the MLC 104 IP Plus MUST have its own power supply.
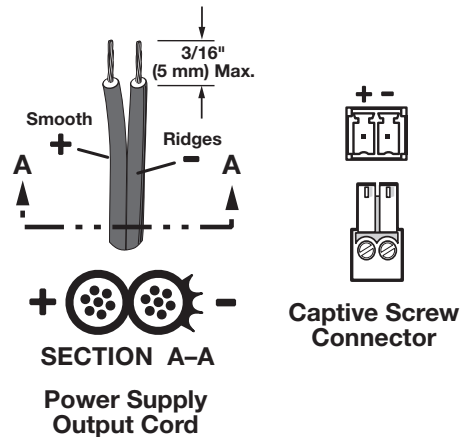
Figure 31 shows how to wire the connector.

Figure 32. **Power Connector Wiring**

> **WARNING:** The two power cord wires must be kept separate while the power supply is plugged in. Remove power before wiring.

> **ATTENTION:**
> - Always use a power supply supplied and or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product. Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities. The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 75 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to building structure or similar structure.
> - Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the unit. The ridges on the side of the cord (see figure 32) identify the power cord negative lead.
> - To verify the polarity before connection, plug in the power supply with no load and check the output with a voltmeter.
> - The length of the exposed (stripped) copper wires is important. **The ideal length is 3/16 inch (5 mm)**. Longer bare wires can short together. Shorter wires are not as secure in the connectors and could be pulled out.

> **NOTE:** Do not tin the power supply leads before installing them in the direct insertion connector. Tinned wires are not as secure in the connectors and could be pulled out.

RS-232 Connector Wiring

Figure 33 shows the wiring for the PVS 405D and the MLC 104 IP Plus RS-232 connectors .
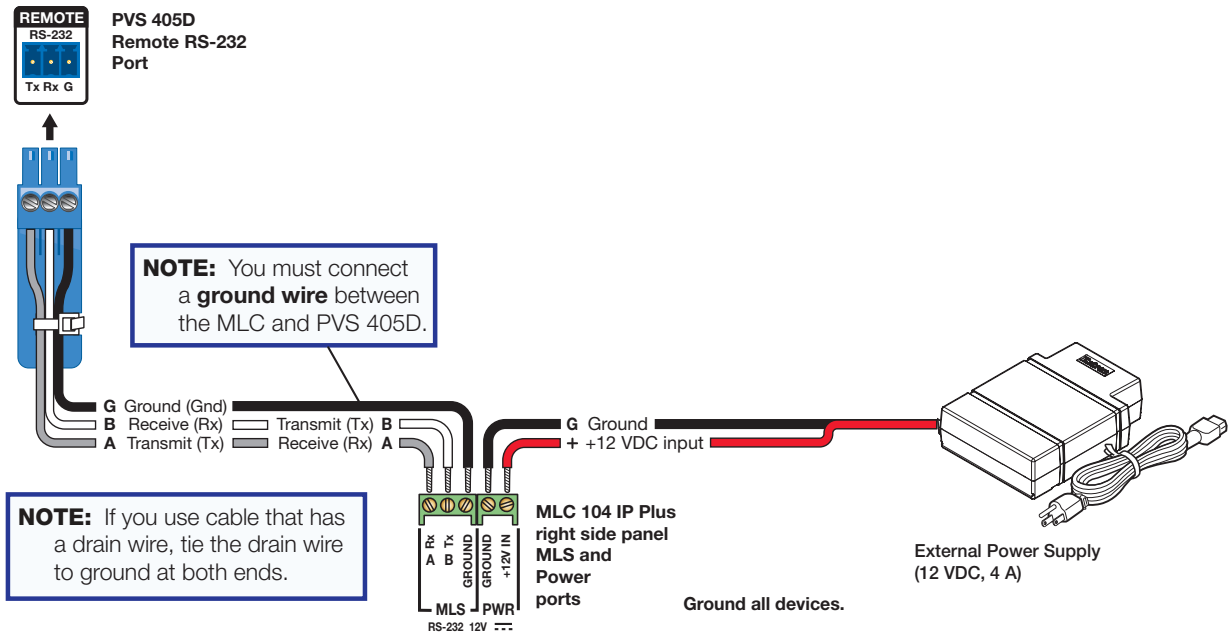

NOTE: You must connect a **ground wire** between the MLC and PVS 405D.

NOTE: If you use cable that has a drain wire, tie the drain wire to ground at both ends.

Figure 33. RS-232 Connector Wiring

From MLC 104 IP Plus terminal	Wire color	To PVS 405D terminal
A - (Rx on the MLS port)	White	A - (Tx on the RS-232 port)
B - (Tx on the MLS port)	Violet	B - (Rx on the RS-232 port)
MLS RS-232 Ground	Drain wire	G - Ground ⏚
Power Ground	Black	To PVS 405D Power Supply
12 V In	Red	To PVS 405D Power Supply

ATTENTION: The length of the exposed (stripped) copper wires is important. **The ideal length is 3/16 inch (5 mm)**. Longer bare wires can short together. Shorter wires are not as secure in the connectors and could be pulled out.
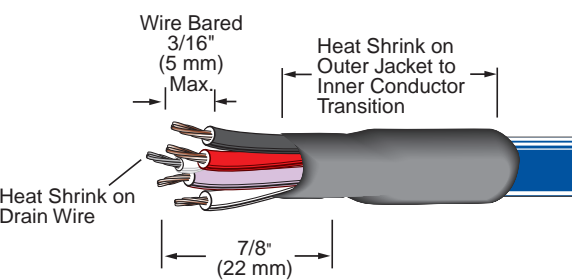

Figure 34. Connector Wire Preparation

NOTES:
- The MLC 104 IP Plus is powered from the PVS 405D associated power supply.
- Do not tin the power supply wires before installing them in the direct insertion connector. Tinned wires are not as secure and could be pulled out.

For IR communication

Connect the IR/RS-232 projector communication cable for either RS-232 or IR projector control.
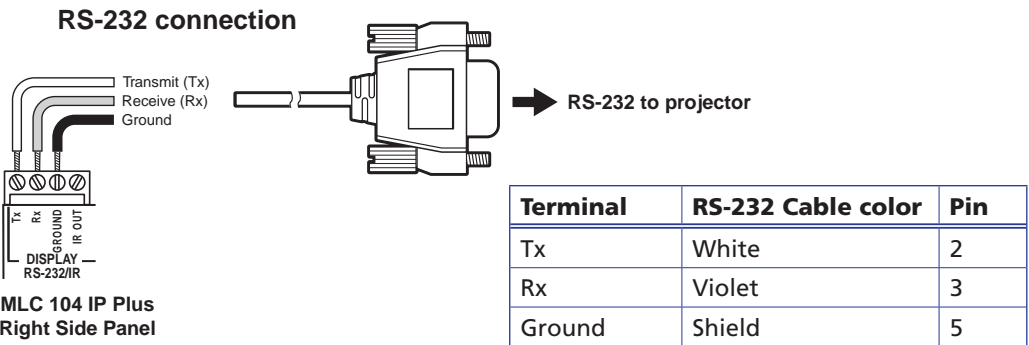
RS-232 connection

Transmit (Tx)
Receive (Rx)
Ground

RS-232 to projector

Tx Rx GROUND IR OUT
DISPLAY —
RS-232/IR

**MLC 104 IP Plus
Right Side Panel**

Terminal	RS-232 Cable color	Pin
Tx	White	2
Rx	Violet	3
Ground	Shield	5

Figure 35. RS-232 Connection to Projector

IR connection   Black

IR Emitter

Ground
IR Signal

To projector

Black   Red

Unidirectional IR Output
via White Striped Wire

100'
(30.5 m)

Tx Rx GROUND IR OUT
DISPLAY —
RS-232/IR

**MLC 104 IP Plus
Right Side Panel**

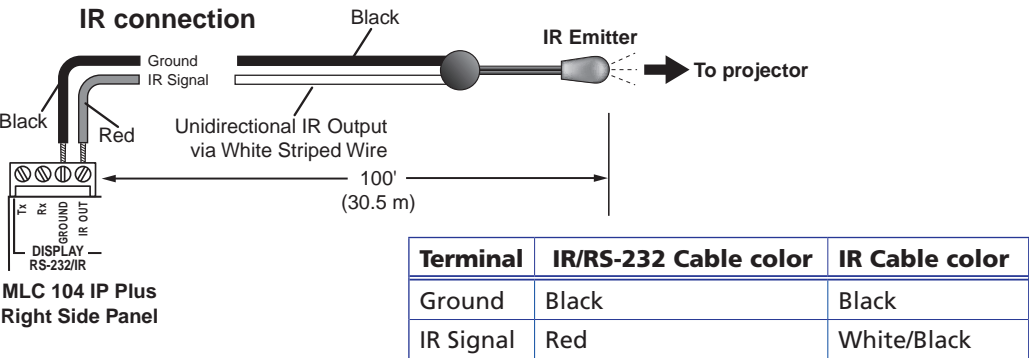| Terminal	IR/RS-232 Cable color	IR Cable color
Ground	Black	Black
IR Signal	Red	White/Black

Figure 36. IR Connection to Projector

Connect the MLC to the projector with an RS-232 cable or IR emitter cable, as appropriate

Connecting RS-232 Cable   **Connecting IR Cable**

IR Emitter

Projector

White
(or striped)   Black

MLC IR/RS-232
Comm Cable

Projector

9-Pin Female

Red   Black

NOTE: Red and black
not used.

NOTE: White, violet, and
shield not used.

White

Shield

Violet

Black   Red

Tx Rx GROUND IR OUT
DISPLAY —
RS-232/IR

Tx Rx GROUND IR OUT
DISPLAY —
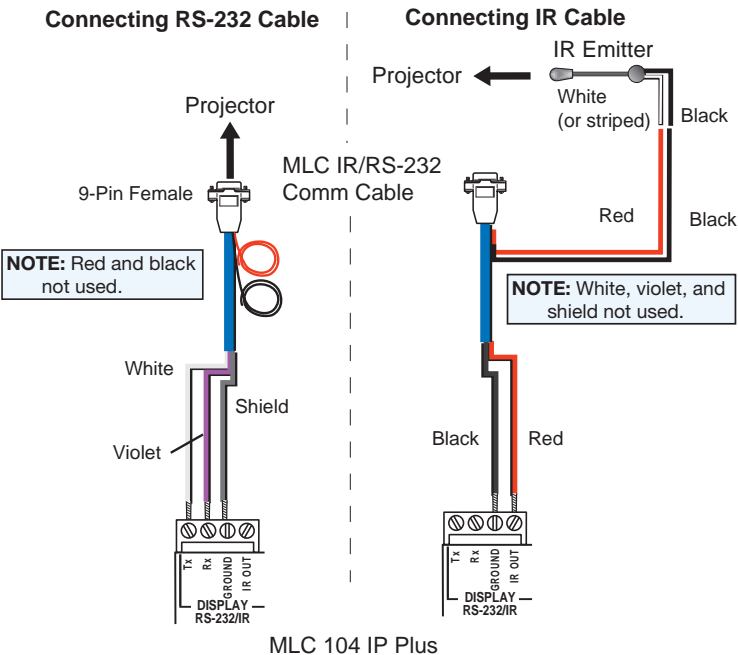RS-232/IR

MLC 104 IP Plus

Figure 37. IR Emitter Cable Connection

NOTE: Some projectors require NULL connection wiring, which inverts the Tx and Rx connections. See the projector guide for details.

IR control for a connected input device such as a BluRay player can be made through the PVT wallplate.

The connections between the MLC 104 IP Plus and the PVS 405D switcher should look like the figure below.
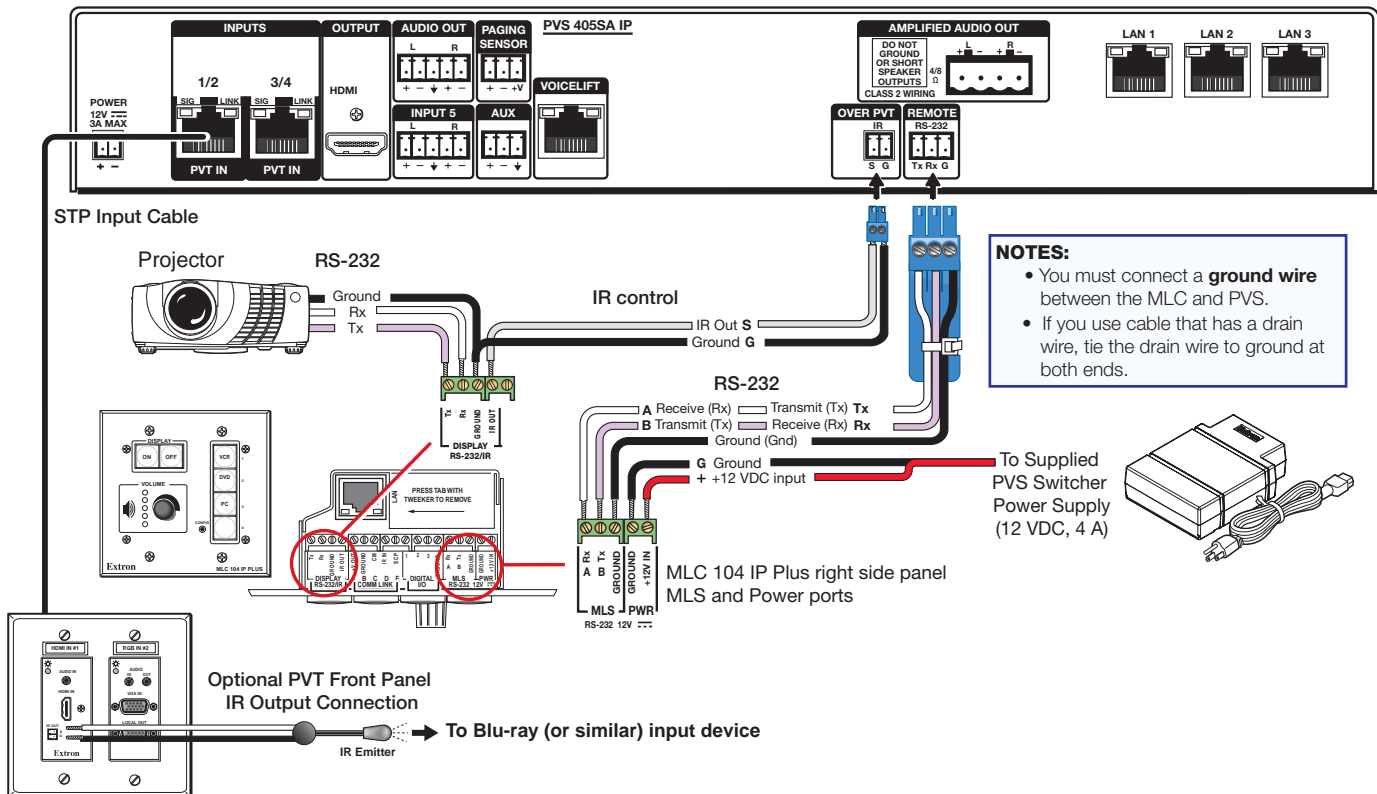

Figure 38.   MLC wiring to the PVS 405D Switcher

Input 5 Connector Wiring

Input 5 is a dedicated-audio only input for an auxiliary, stereo, line-level analog audio signal from an output source such as an iPod device or an MP3 player. Connect the cable from the source to this 5-pole captive screw connector. The connector can be wired as balanced or unbalanced as shown below.

> **NOTE:** Input 5 is audio only. No video signals are supported on this input.

Balanced Audio Input

Balanced Mono Input
(high impedance)

INPUT 5

Unbalanced Stereo Input

Unbalanced Mono Input

Aux Audio Input 5

Audio Input

$\frac{3}{16}$" (5 mm) MAX.
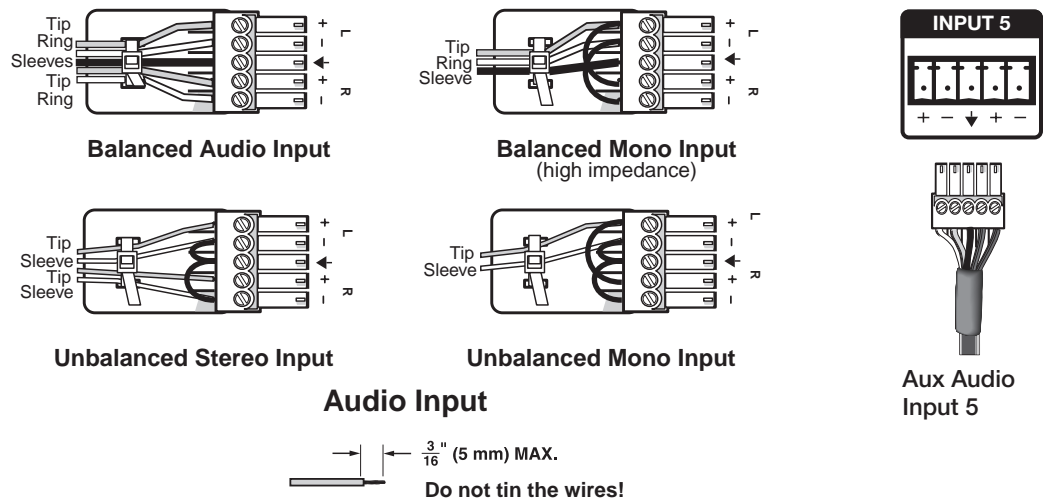
Do not tin the wires!

Figure 39.   Input 5 Audio Wiring

Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America,
and Central America:
Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

Japan:
Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe and Africa:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:
Extron Asia Pte Ltd
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

> **NOTE:** If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.
>
> **USA**: 714.491.1500 or 800.633.9876 **Europe**: 31.33.453.4040
> **Asia**: 65.6383.4400 **Japan**: 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.